A Database Publication

ATARI USER

Vol. 3 No. 1 May 1987 £1

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The biggest, top-selling magazine for all Atari 8 bit users



Vol. 3 No. 1 May 1987

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FULL and part-time writers are urgently needed by Database Publications, publishers of Atari User *and its companion,* Atari ST User. *If YOU know the Atari or Atari ST inside out, can express your ideas on paper – and want to become part of the exciting future that lies ahead for Atari machines, then write now to: The Managing Editor, 68 Chester Road, Hazel Grove, Stockport SK7 5NY. Please include your phone number.*

Business package hits the chart

A BUSINESS software package has achieved a world first by storming its way into the all-important Gallup Top 40 chart on the eve of its launch for the Atari 8 bit range.

Mini Office II, the award winning title from Database Software (061-429 8008), entered the best-selling list at number 25.

The chart is considered the most significant of all on the UK software scene because it includes all machine formats.

And what is even more surprising about Mini Office II's most recent success is that it had to compete against games costing as little as £1.99.

Not that this is the first distinction to be achieved by the package. Far from it. Launched in October, 1984, the original Mini Office was the finalist in two categories of the British Microcomputing Awards – the Oscars of the industry.

The first version for the BBC Micro also displaced games to reach the Top Ten for that machine.

Mini Office version one went on to win national acclaim for being ahead of its time in that it was the first professionally written low-cost business package. At just £5.95 on cassette for the BBC Micro, the price tag was considered revolutionary as its nearest competitor cost several hundred pounds.

Its much enhanced successor, Mini Office II, took 26 man years programming and contains six modules – word processor, database, spreadsheet, graphics, label printer and communications.

Mini Office II is priced at £19.95 on disc for the Atari 8 bit range.

Atari is wooing software houses

ATARI's new good neighbours policy towards support companies is already paying dividends. Software house representatives are now visiting Atari UK headquarters at the rate of two or three a day.

And the result, says manager of software marketing Roland Whitehouse, is great cooperation.

"We are showing that we want to keep up with new releases", he said.

He is receiving assurances that there will be plenty of software for the 8 bit and especially for the 65XE games machine.

"What is really encouraging is that there is an increasing number of firms committing themselves to producing cartidges for the new games machine", said Whitehouse.

The software house response confirms the company's belief that a major revival in the video console sector will happen this year.

A company spokesman told *Atari User*: "We believe the average age of prospective buyers is getting younger.

"This means there are a lot of under-tens out there who aren't really ready for a proper micro but are keen to get their hands on a games machine.

"And it doesn't hurt Atari's prospects that we already have a games software range that it second to none."

Atari originally estimated it would sell 150,000 8 bit computers and games consoles in 1987.

But this figure had to be revised when advance orders for 70,000 units were placed within the first few weeks of the year.

Now the company is talking about selling at least 200,000 – and possible a quarter of a million – games machines in 1987.



A Mole in the micro

THE latest Adrian Mole series on Thames Television forms the basis of a new Virgin Games release for the Atari 8 bit machines.

It is the sequel to The Secret Diary of Adrian Mole which was produced by Level 9 and Mosaic Publishing.

The Growing Pains of Adrian Mole comes from the same joint source, but is being marketed by Virgin. Cassette price £9.95.

Losing its magic . . .

MAGIC is old hat says text adventure specialist Robico.

The company is looking for new writers on the Atari 8 bit but, says software manager Rob O'Leary: "We are not too keen on magic adventures any more – unless they are really original".

He explained that the firm has a very good freelance programmer doing conversions to the Atari, so that only originals were needed.

"What we are looking for is finished or part finished programs which we will market. We would evaluate them and even if the programming is not brilliant we can work on them."

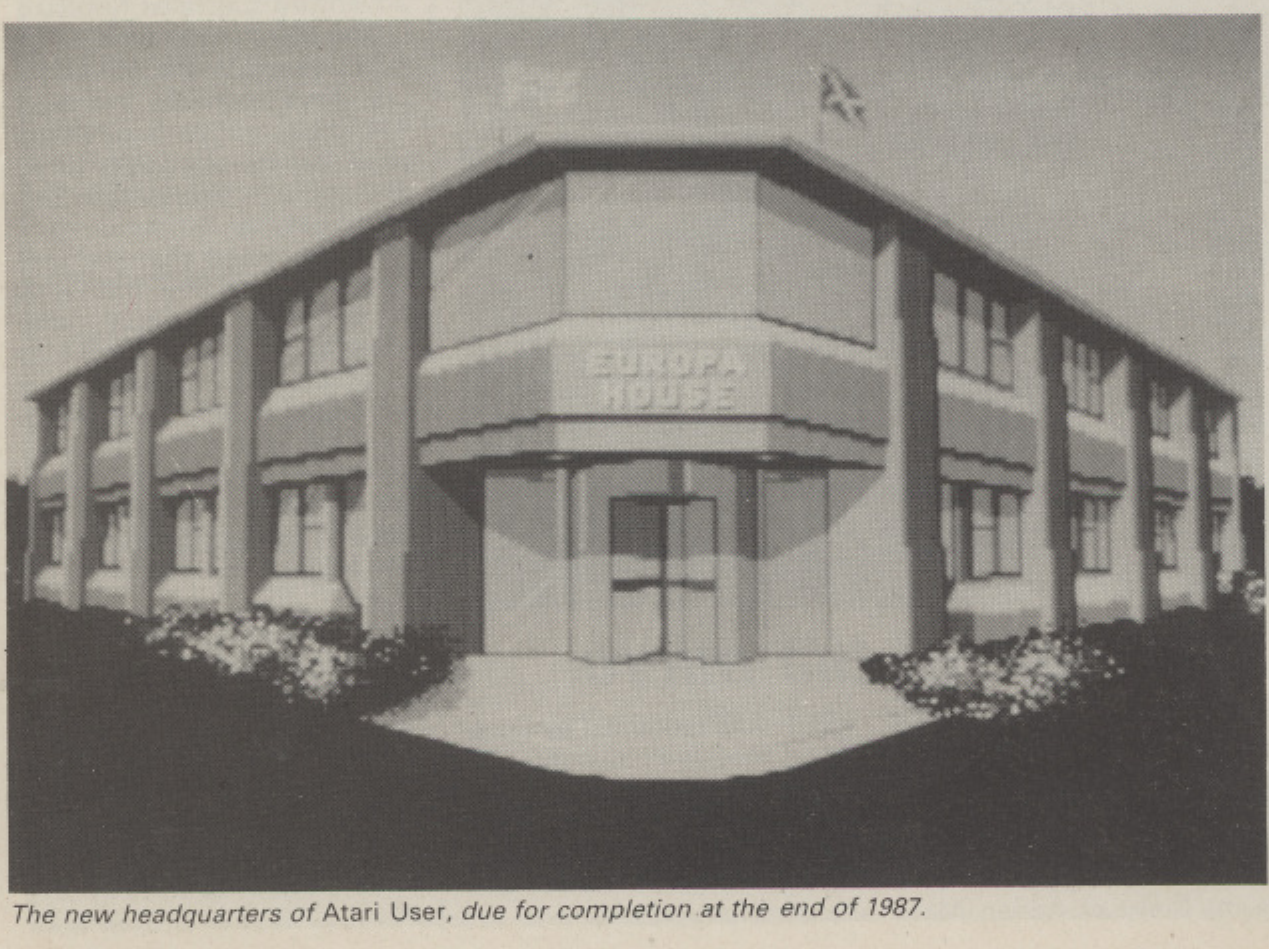
He said most Robico (0443 227354) adventures had more than 200 locations, which was why graphics had never featured highly, though they were not out of the question.

O'Leary said that they were hoping to get more disc-based adventures for the Atari.



Derek Meakin and 149 fellow diggers attack the green field site of the new headquarters

Digging away for Atari User's new home



The new headquarters of Atari User, *due for completion at the end of 1987.*

THE world's first mass sod-cutting ceremony herealded the start of building a new £1 million home for *Atari User* and its sister Database Publications magazines.

All 150 Database employees took part in the traditional act of ground-breaking to celebrate their role in the company's rise to prominence in computer magazine publishing.

The new site in the Cheshire countryside near Stockport echoed to the sound of scores of spades and shovels hitting the ground simultaneously at a signal from Database head Derek Meakin.

"We originally toyed with the idea of inviting a leading figure in the computer industry to perform the ceremony", he said, "but decided in the end to keep it within the company.

"All our employees have contributed to Database becoming the UK's leading publisher of computer magazines – so they all deserved to play a part on the big day".

BT titles collect 31 awards

BRITISH Telecom's software titles have scooped an amazing total of 31 awards here and abroad in the past 12 months.

The accolades were awarded by reader polls and computer journalists' votes in magazines published in Britain, France, Germany and the United States.

More than two-thirds of Telecomsoft's sales of programs on the Rainbird, Firebird and Beyond labels are now overseas.

After The Pawn, The Thieves

WHEN The Pawn from Rainbird won acclaim across the board it was almost inevitable that there should be some sort of follow up.

But the designers, Magnetic Scrolls, resisted the temptation to do a "start where you left off" game.

Guild of Thieves, out on the Atari 8 bit, shares the same setting as The Pawn, the mystical land of Kernovnia.

But there the similarity ends. All the characters and locations are new, as is the style. Designed to appeal to a wider range of adventures, it has a more direct gameplay but with more problems to solve.

Increased interaction, too, is another feature. Humans, animals and plants can be addressed in complex sentences through the parser.

The adventure opens with your application to join the guild, an elite band of professional rapscallions, where tests are set to prove an applicant's worth and status.

You are given a task which will tax both your wits and ingenuity. You have to ransack an island and capture its treasures while encountering a variety of useful and dangerous things.

It includes several complex puzzles and 30 scene-setting illustrations which, claim Rainbird (01-240 8838), add a new dimension to computer graphics.

Soccer promotion

ONE of the first results of Prism's takeover of the Addictive Games label is the release on the Atari 8 bit of the best selling soccer computer game ever, Football Manager, at £2.99.

This means, says Prism, "the game, in its new double cassette packaging, will be competing in a new division against the budget software teams.

"We believe this newcomer is likely to cause quite a few upsets as it moves through the pack and to the top of the league".

Prism (01-804 8100) is planning to re-launch Addictive's Silicon Joy label to carry more budget-priced games.

Flying high

Hot air ballooning was never as eventful as in Up Up and Away from Bug-Byte for the Atari 8 bit micros.

The obstacles in your flight path include aircraft, kites, birds, lightning, and punks throwing missiles.

Fuel problems, landing and taking off again, and throwing sandbags at the punks add to the fun. Price £2.99.

The Gallup Chart Top 20

Atari Software

This Month	Last Month	Title (Software House)	Price
1	▲ 1	BMX SIMULATOR *(Code Masters)*	1.99
2	•	COLONY *(Bulldog)*	1.99
3	▲ 5	GREEN BERET *(Imagine)*	9.95
4	▼ 3	GUN LAW *(Mastertronic)*	1.99
5	•	SILENT SERVICE *(Microprose/US Gold)*	9.95
6	▲ 8	DESPATCH RIDER *(Mastertronic)*	1.99
7	▼ 4	LA SWAT *(Mastertronic)*	2.99
8	▼ 2	SPIKY HAROLD *(Firebird)*	2.99
9	▲ 19	HOUSE OF USHER *(Micas)*	2.99
10	▲ 11	KNOCKOUT *(Americana)*	2.99
11	▼ 5	CRYSTAL RAIDER *(Mastertronic)*	2.99
12	•	MOLECULE MAN *(Mastertronic)*	2.99
13	▼ 7	RED MAX *(Code Masters)*	1.99
14	•	FOUR GREAT GAMES *(Micro Value)*	3.99
15	▼ 12	NINJA *(Mastertronic)*	1.99
16	•	SUPERMAN *(First Star/Prism)*	2.99
17	▼ 16	LEADERBOARD *(Access/US Gold)*	9.95
18	•	WARHAWK *(Firebird)*	1.99
19	▼ 9	NINJA MASTER *(Firebird)*	1.99
20	•	MONKEY MAGIC *(Micro Design)*	2.99

Compiled by Gallup/Microscope

Budget software is very much the order of the day, with Green Beret the top-selling full-price game, followed by the excellent simulation Silent Service. By the June issue we will know how Atari User's Star Game, Spindizzy, is selling.

Bid to bring back BBC's Micro Live

TV's only regular computer programme, Micro Live, has been axed. But Database Publications, prompted by hosts of letters from readers, is determined it should be brought back.

The last Micro Live in the present series appeared at the end of March.

Head of Continuing Education (Television) at the BBC David Hargreaves said: "This season of Micro Live was its third. We have decided not to plan a fourth for next winter.

"We want to pause, take stock and think about how we ought to be making the best contribution to our understanding of information technology in the future".

Derek Meakin, head of Database Publications, said: "Micro Live has played a leading role in introducing the delights of computing to an ever-growing audience.

"To kill the series now, when so many exciting developments are taking place in the whole world of microcomputing, is a retrograde step".

Programme director David Allen said he appreciated Database's concern.

"It is a very important area which needs to have continuing exposure on television.

"There is a job to be done in keeping the subject in the general public's eye because it is important for the community and consumer in so many ways".

So, Atari User readers, it's time to play your part. If you want to help save Micro Live, write to: The Controller, BBC 2, TV Centre, Wood Lane, London W12.



Micro Live presenters Ian McNaught-Davies, Lesley Judd and Fred Harris

Youth club runs an Atari micro workshop

A LONDON youth club that uses Atari micros to take computing to the community is appealing for support so it can continue its work.

Honor Oak Youth Club in Lewisham needs £5,000 for projects it hopes to carry out this year.

After being approached by the Lewisham youth service last year, it provided a workshop with computing facilities for 20 local youth groups.

Machines used in the project included two STs, three 130XEs and eight 800XLs, some owned by the club and the others borrowed from various sources. Manpower services funded five part-time computer instructors based at Honor Oak.

Over a four-week period more than 1,200 local youngsters were given hands-on experience of micros.

Twice-daily sessions covered graphics, adventure program writing, music composition, robot-building, animation and pinball game construction.

This summer Honor Oak wants to run a similar computer workshop, but this time on four different public sites including a shopping centre and a museum to enable adults to join in as well.

There are also plans this year to take Atari micros along to the local children's hospital so that long term patients there can enjoy them.

"We also need to keep the momentum going at Honor Oak", senior youth worker Mike Fordham told *Atari User*.

"The Atari micros are an invaluable tool in developing decision making, problem solving and other group exercises.

"If we don't get the financial help we need this year, not only will our community projects suffer but we shall possibly have to retract computer activities at the club itself.

"On the other hand, if we can find £5,000 from somewhere we can not only repeat last summer's success but can probably improve on it as well".

Drive in America

ATARI has apppointed former Texas Instruments and IBM executive Jerry Brown as vice-president and general manager for North American operations.

The apppointment is part of a new bid to increase Atari's share of the US market, said Jack Tramiel.

"Personal computers are a key component in our corporate growth stategy", he said.

"The 520ST and 1040ST are already among the best selling personal computers in Europe – we now plan to focus our efforts on the US, and Jerry Brown will play a major role in leading that effort".

More hits

THE seventh volume of English Software's Smash Hits for the Atari 8 bit machines has been released. It includes Elektraglide, Colossus Chess 3.0, Blue Max and Alley Cat.

English (061-835 1358) has released it on twin cassette for £9.95 and on disc for £14.95.

TECHNOLOGY SO ADVANCED ...



MEMORY
- 512Kbytes RAM (520ST-M, FM)
- 1024Kbytes RAM (1040ST-F)
- 192Kbytes ROM
- 128Kbytes external plug-in ROM option

ARCHITECTURE
- Motorola 68000 Central Processing Unit (CPU) with a clock speed of 8MHz
- 16-bit external data bus
- 32-bit internal data bus
- 24-bit address bus
- 8×32-bit data & address registers
- 7 levels of interrupts
- 56 instructions
- 14 addressing modes
- 5 data types
- DMA (Direct Memory Access)
- real time clock as standard

GRAPHICS
- full bit-mapped display
- palette of 512 colours

Using Atari Monitors (on 520 & 1040):
- 640×400 high resolution - monochrome
- 640×200 medium resolution - 4 colours
- 320×200 low resolution - 16 colours
- 80 column text display (40 col low res)

Using Domestic TV (on 520):
- 640×200 medium resolution - 4 colours
- 320×200 low resolution - 16 colours
- 40 columns × 25 line text display

SOUND AND MUSIC
- 3 programmable sound channels
- frequency programmable 30Hz - 125KHz
- programmable volume
- wave & dynamic envelope shaping
- programmable attack, decay, sustain, release
- Musical Instrument Digital Interface (MIDI)
- MIDI allows connection of synthesisers etc.

STANDARD SOFTWARE
- GEM desktop + TOS operating system
- ST BASIC interpreter/language system

MOUSE
- high precision
- 2 button control
- free with 520ST-FM/1040ST-F
- non slip ball motion sensor
- removable ball for easy cleaning

INPUT/OUTPUT
- MIDI out .... (5 pin DIN) 31.25K baud
- MIDI in .... (5 pin DIN) 31.25K baud
- audio out .. 1.0V DC peak to peak, 10K ohm
- audio in ...... 1.0V DC peak to peak, 10K ohm
- RGB monitor .... 1.0V DC, 75 ohm
- mono monitor .... 1.0V DC, 75 ohm
- mono horizontal scan rate 35.7KHz
- mono vertical scan rate 71.2KHz
- sync .... 5V DC (active low) 3.3K ohm
- modem/serial ...... RS232C, 50 to 19,200 baud
- floppy disk .... 250 Kbits/s
- hard disk .... 11.3 Mbits/s
- mouse .... standard Atari connector
- joystick .... standard Atari connector
- cartridge port .... 128K capacity
- RF output (520ST-FM) .... for TV use

OPERATING SYSTEM
- TOS with GEM environment in ROM
- hierarchical file structure with sub-directories and path names
- user interface via GEM, with self explanatory command functions
- multiple windows + icons
- window resizing, re-positioning and erasing
- drop down menus (selected by mouse)
- GEM virtual device interface

COMMUNICATIONS
- RS-232C serial modem port
- 8-bit parallel printer port
- MIDI port (also for networking use)
- VT52 terminal emulation

KEYBOARD
- standard QWERTY typewriter format
- 95 full stroke keys
- 10 function keys
- 18 key numeric keypad + cursor keys
- variable auto-repeat & key click response
- keyboard processor reduces CPU overhead

... IT'S AFFORDABLE

ONLY FROM SILICA

Finally, there's a personal computer that not only solves problems like other computers, but also solves the one problem that other computers have created. Affordability. Silica Shop are pleased to present the ST range of personal/business computers from Atari. The ST was designed utilizing the most recent breakthroughs in semiconductor technology, producing a personal computer that performs tasks with fewer parts. Which means it costs less to make. And less to buy. The latest ST computers now include built in power supplies and built in disk drives. The TOS operating system and GEM window environment are now on ROM chips which are already installed in the ST keyboard. This enables automatic instant booting when you switch on. Silica Shop are pleased to offer the complete Atari ST range. Our mail order department is situated in Sidcup and we have 4 retail outlets at Sidcup, Orpington, Lion House (Tottenham Court Rd) and Selfridges (Oxford Street). We have eight years experience of Atari products, longer than any other UK company, and are well established as the UK's No.1 Atari specialist. With a group turnover of over £5 million and in excess of 70 staff, we provide unbeatable service and support. We provide several facilities which you will find invaluable during your Atari computing life and most of these facilities are available **ONLY FROM SILICA**. We suggest that you read through what we have to offer, before you decide where to purchase your Atari ST.

FREE STARTER KIT - Only From Silica

When you purchase any Atari ST keyboard, you will not only receive the best value for money computer on the market, but you will also receive the following from Atari Corporation as part of the package:

** BASIC Language Disk * BASIC Manual * ST Owners Manual * TOS/GEM on ROM*

If you buy your ST from Silica Shop, you will also receive:

** NEOchrome - colour graphics program * 1st Word - Word Processor*

In addition, we at Silica would like to see you get off to a flying start with your new computer, so we have put together a special **ST STARTER KIT** worth over £100, which we are giving away **FREE OF CHARGE** with every ST computer purchased at our normal retail prices. This kit is available **ONLY FROM SILICA** and is aimed at providing users with a valuable introduction to the world of computing. We are continually upgrading the ST Starter Kit, which contains public domain and other licensed software, as well as books, magazines and accessories all relevant to ST computing. Return the coupon below for full details.

DEDICATED SERVICING - Only From Silica

At Silica Shop, we have a dedicated service department of five full time Atari trained technical staff. This team is totally dedicated to servicing Atari computer products. Their accumulated knowledge, skill and experience makes them second to none in their field. You can be sure that any work carried out by them is of the highest standard. A standard of servicing which we believe you will find **ONLY FROM SILICA**. In addition to providing full servicing facilities for Atari ST computers (both in and out of warranty), our team is also able to offer memory and modulator upgrades to ST computers.

1Mb RAM UPGRADE: Our upgrade on the standard Atari 520ST-M or 520ST-FM keyboard will increase the memory from 512K to a massive 1024K. It has a full 1 year warranty and is available from Silica at an additional retail price of only £86.96 (+VAT = £100).

TV MODULATOR UPGRADE: Silica can upgrade the 1040ST-F to include a TV modulator so that you can then use it with your TV set. This is an internal upgrade and does not involve any untidy external boxes. A cable to connect your ST to any domestic TV is included in the price of the upgrade which is only £49 (inc VAT). The upgrade is also available for early 520ST computers at the same price.

THE FULL STOCK RANGE - Only From Silica

We aim to keep stocks of all Atari related products and our warehouse carries a stock of £½ million. We import many software titles direct from the USA and you will find that we have new releases in advance of many of our competitors. Unlike dealers who may only stock selected titles, we have the full range. In addition, we carry a complete line of all books which have been written about the Atari ST. A range as wide as ours is something you will find is available **ONLY FROM SILICA**.

AFTER SALES SUPPORT - Only From Silica

Rest assured that when you buy your ST from Silica Shop, you will be fully supported. Our free mailings give news of releases and developments. This will help to keep you fully up to date with what's happening in the Atari market. And in addition, our sales staff are at the end of a telephone line to service all of your Atari requirements. If you purchase an ST from Silica and would like any programming or technical advice, we have a full time technical support team to help you get the best from your computer. Because we have both the staff and the systems specifically dedicated to providing after sales service on Atari ST computers, we are confident that our users enjoy an exceptionally high level of support. This can be received **ONLY FROM SILICA**.

FREE CATALOGUES - Only From Silica

At Silica Shop, we recognise that serious users require an in-depth information service, which is why we mail free newsletters and price lists to our ST owners. These are up to 48 pages long and are crammed with technical details as well as special offers and product descriptions. If you have already purchased an ST and would like to have your name added to our mailing list, please complete the coupon & return it to us. The information service is available **ONLY FROM SILICA**.

FREE OVERNIGHT DELIVERY - From Silica

Most orders are processed through our computer within 24 hours of receiving them. Most hardware orders are sent by the overnight METRO courier service FREE OF CHARGE to customers within the UK. This method helps to ensure minimum delay and maximum protection.

PRICE MATCH - Only From Silica

We hope that the combination of our low prices, FREE UK delivery service, FREE Starter Kit and FREE after sales support, will be enough to make you buy your Atari equipment from Silica Shop. If however, there is something you wish to purchase, and you find one of our competitors offering it at a lower price, then please contact our sales department, providing us with our competitor's name, address and telephone number. If our competitor has the goods in stock, we will normally match the offer (on a 'same product - same price' basis) and still provide you with our normal free delivery. We realise that we are not the only company who will match a competitor's price. However, if you come to us for a price match, you will also be entitled to our after sales service, including free newsletters and technical support. This makes our price match promise rather special, something you will receive **ONLY FROM SILICA**. We don't want you to go anywhere else for your Atari products. So shop at Silica, the UK's No1 Atari Specialist.

SIDCUP (& Mail Order) **01-309 1111**
1-4 The Mews, Hatherley Road, Sidcup, Kent, DA14 4DX

LONDON **01-580 4839**
Lion House (1st floor), 227 Tottenham Court Rd, London, W1

LONDON .... **01-629 1234 ext 3677**
Selfridges (1st floor), Oxford Street, London, W1A 1AB

520ST-M

The affordability of Atari computers is reflected in the price of the 520ST-M keyboard, which is a mere £259 (inc VAT). This version of the ST comes with 512K RAM, as well as a modulator and lead for direct connection to any domestic TV. The price does not include a mouse. In addition, when you buy your 520ST-M from Silica, you will also receive the FREE Silica 'ST Starter Kit'. During 1987, many software houses will be producing games software on ROM cartridges, which will plug directly into the cartridge slot on the 520ST-M keyboard, giving instant loading without the expense of purchasing a disk drive. With the enormous power of the ST, you can expect some excellent titles to be produced, making this the ultimate games machine! If your requirement is for a terminal, then the 520ST-M can fulfill this role too. Leads are available to connect the ST to a variety of monitors, and with the imminent introduction of terminal software on ROM cartridge, the ST provides a low price terminal for business use. If you wish to take advantage of the massive range of disk software available for the ST range, you will need to purchase a disk drive. Atari have two floppy disk drives available, a ½ Mbyte model £149 and a 1Mbyte model £199. Full details of these drives, as well as the Atari 20Mbyte hard disk are available on request. If required at a later date, the mouse may be purchased separately.

£259

1040ST-F

For the businessman and the more serious home user, Atari have their most powerful model, the 1040ST-F with 1028K RAM. This low cost powerhouse can be introduced into a business environment as a stand-alone system, or can support a mainframe computer as a terminal. The 1040ST-F not only features twice as much memory as the 520ST-FM, but also includes a more powerful built-in disk drive. The drive featured on the 1040ST-F is a one megabyte double sided model. The extra memory facility of the 1040ST-F makes it ideal for applications such as large databases or spreadsheets. Like the 520ST-FM, the 1040ST-F has a mains transformer built into the console to give a compact and stylish unit with only one mains lead. The 1040ST-F is also supplied from Silica Shop with a free software package and 'ST STARTER KIT'. In the USA, the 1040ST-F has been sold with a TV modulator like the 520ST-FM. However, for the UK market, Atari are manufacturing the 1040ST-F solely with business use in mind and it does not currently include an RF modulator, this means that you cannot use it with a domestic TV (Silica Shop do offer a modulator upgrade for only £49). The 1040ST-F keyboard costs only £599 (inc VAT) and, unless a modulator upgrade is fitted, will require an Atari or third party monitor. There are three Atari monitors available and the prices for the 1040 with these monitors are as follows:

1040ST-F Keyboard	*Without Monitor*	*- **£599** (inc VAT)*
1040ST-F Keyboard	*+ High res mono monitor*	*- **£699** (inc VAT)*
1040ST-F Keyboard	*+ Low res col monitor*	*- **£799** (inc VAT)*
1040ST-F Keyboard	*+ Med res col monitor*	*- **£899** (inc VAT)*

The 1040ST-F comes with a mouse controller and includes 1Mbyte of RAM. It has a 1Mbyte double sided disk drive and mains transformer, both built into the keyboard to give a compact and stylish unit, with only one mains lead.

£599

520ST-FM

The 520ST-FM with 512K RAM and free mouse, represents a further breakthrough by Atari Corporation in the world of high power, low cost personal computing. This model is the latest addition to the ST family, and is not only powerful, but compact. It is priced at only £399 (inc VAT) a level which brings it within the reach of a whole new generation of computer enthusiasts. When purchased from us, it comes with the FREE Silica 'ST Starter Kit' see paragraph on the left. To make the 520ST-FM ready for use straight away, Atari have built into the keyboard a ½ megabyte disk drive for information storage and retrieval, allowing you easy access to the massive range of disk based software which is available for the ST. This new computer comes with all the correct cables and connections you will need to plug it straight into any standard domestic television set. You do not therefore have to purchase an Atari monitor. If you do require a monitor however, these are available with the 520ST in the following money saving packages:

520ST-FM Keyboard	*Without Monitor*	*- **£399** (inc VAT)*
520ST-FM Keyboard	*+ High res mono monitor*	*- **£499** (inc VAT)*
520ST-FM Keyboard	*+ Low res colour monitor*	*- **£599** (inc VAT)*
520ST-FM Keyboard	*+ Med res colour monitor*	*- **£699** (inc VAT)*

Because the 520ST-FM has its own power transformer built into the keyboard, there are no messy external adaptors to clutter up your desk space. You are left with only one mains lead, serving both the disk drive and the computer. You couldn't ask for a more stylish and compact unit.

£399

ATARI ST

To: Silica Shop Ltd, Dept ATUSR 0587, 1-4 The Mews, Hatherley Road, Sidcup, Kent, DA14 4DX

PLEASE SEND ME FREE LITERATURE ON THE ATARI ST

Mr/Mrs/Ms: .... Initials: .... Surname: ....

Address: ....

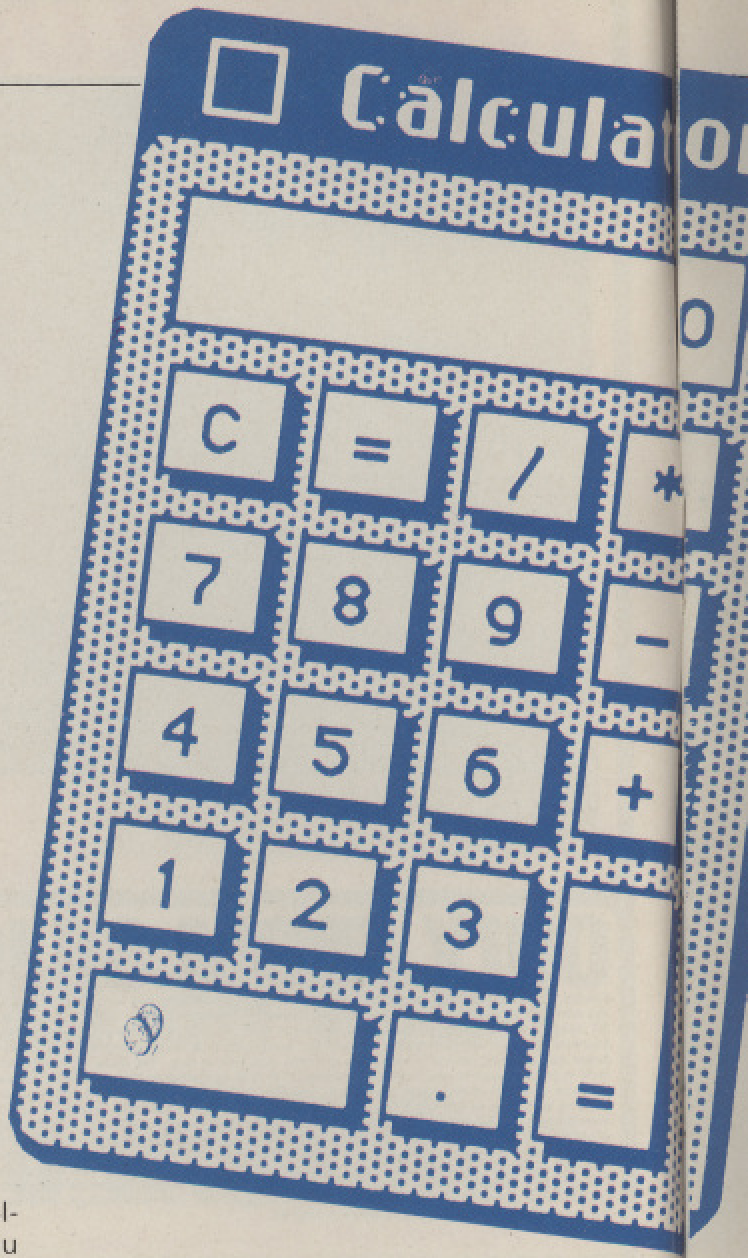
....

....

.... Postcode: ....

Do you already own a computer
If so, which one do you own? ....

Maths magic on your Atari



HAVE you ever looked on in envy as your ST-owning colleagues gained access to all sorts of pop-up utility programs? Well now you can have something similar on your trusty 8 bit Atari – a four function pop-up calculator taking only 21 bytes of user memory.

This program creates a pop-up calculator which hides itself under the Basic rom on an XL or XE machine. The routine which calls it is only 21 bytes long, hence the calculator doesn't even remove any of your program work space.

However, because of the way in which the calculator uses the bank switched memory system of the XL/XE machines it will not work on an old 400 or 800.

Let's take a look at how it works. The program can be split into six parts:

Lines 10 to 270 provide the first screen menu and check the data. The program will first ask if you want to make a tape or a disc, then go through the data to make sure that it's correct.

If there are any discrepencies a warning message will be displayed with the relevant line number. Correct the error and run the program again until it is free of errors.

Lines 500 to 770 generate a cassette form of the program. Lines 2000-2180 are listed to the cassette, followed by the machine code data file. These lines may be omitted by disc users, along with the data statements 3000-3110.

Lines 1000 to 1170 enable the program to check its own data – it points to any data errors and flags them. The use of Get It Right! and this checker should track down any data errors.

As this is a machine code program, any errors may lock your computer up with no escape except to reboot the machine. This is also a good reason to save the program before you run it.

Lines 2000 to 2180 constitute the data loading program for cassette users. They are listed to the cassette, followed by the data for the calculator and a short machine code loader.

This loader is poked into page 6 and puts the calculator data under the Basic rom. The program then deletes itself from memory. These lines may be omitted by disc users.

Lines 4000 to 4340 create the disc version. First an AUTORUN.SYS file is created. This is a three part file consisting of a program to turn the Basic rom off, the calculator in standard load format and a program to turn the Basic rom back on.

After this is created a program called CALC is written to the disc. Calling CALC from the Dos menu (menu option L) will allow you to run the calculator directly. These program lines may be omitted by cassette users, along with the data statements lines 3500-3999.

Lines 5000 to 5050 displays three pages of user information. Page 1 gives general background information, page 2 describes assembler use of the calculator and page 3 shows a program to run the calculator from Basic.

Loading the calculator is a little different depending on whether you are working with cassette or disc. Disc users should simply boot the machine with the disc containing the AUTORUN.SYS file in the drive, which will install the calculator.

It is possible to append another machine code program to the back of this one – for example an AUTORUN.SYS that runs a Basic program. All you need do is rename the original AUTORUN.SYS as TEMP, then create the calculator AUTORUN.SYS and append your renamed file to the end of it.

Cassette users should ENTER and then run the tape created by the program we have listed. This will load the data and NEW itself, leaving the calculator ready for use.

From Basic, a small machine code program needs to be run to call the calculator. Program II demonstrates one such technique.

Lines 10000 to 10020 hold the necessary code, and this data can easily be placed into a string for convenience. The code can equally well be poked into page 6 (1536 onwards) and be run with **X=USR(1536)**.

This is more useful when working in direct mode, while strings are better for use within a program as they leave page 6 free. From a machine code program just skip the initial PLA (104), and JSR to the start of the code.

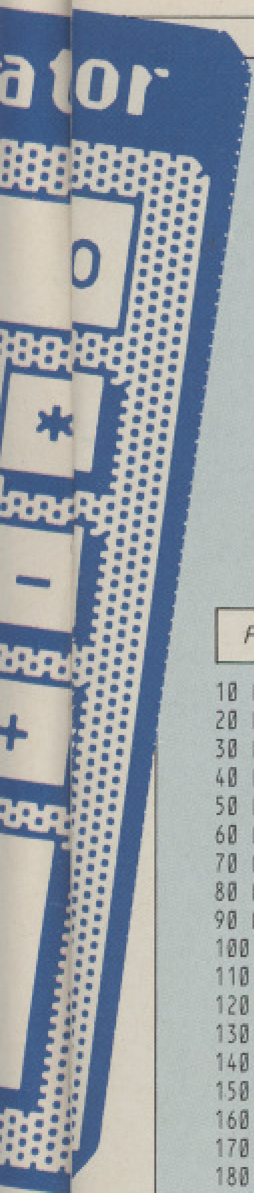
The calculator doesn't offer anything fancy, just the basic number keys and the + – * / function keys.

To clear an input error press E, to clear the calculator completely press A and to quit back to Basic press Q.

If a result is too large 'OVER RANGE' will show in the display. It will do continuous calculation (such as 2 * 3 + 56 + 3 – 5), but it won't show powers (1.3 E 14). Results are not stored anywhere and so will have to be written down.

Operation is protected from the BREAK key but SYSTEM RESET will dump you back into Basic at the READY prompt. Division by ZERO is not trapped and thus can give some odd results.

Perhaps you might like to consider modifying the routine to patch into the screen editor device handler to allow you to simply type 'CALC' at the prompt instead of the USR call. Let us know how you get on!



A pop up calculator from ALAN NORMAN

Program I

```
10 REM *****************************
20 REM *                           *
30 REM *    POP UP CALCULATOR      *
40 REM *                           *
50 REM *       WRITTEN BY          *
60 REM *                           *
70 REM *       ALAN NORMAN         *
80 REM *                           *
90 REM *****************************
100 REM
110 REM THIS PROGRAM WILL CREATE A
120 REM MACHINE CODE POP UP FOUR
130 REM FUNCTION CALCULATOR HIDDEN
140 REM UNDER THE BASIC ROM.
150 REM FOLLOW THE INSTRUCTIONS TO
160 REM CREATE EITHER AN AUTORUN.SYS
170 REM FILE & A DOS RUN FILE (CALC)
180 REM OR A CASSETTE BASED VERSION.
190 REM
200 REM SAVE THIS PROGRAM BEFORE USE
210 REM
220 DIM A$(1),B$(40)
230 ? CHR$(125)
240 ? "FOUR FUNCTION CALCULATOR":? :?
"BY  ALAN NORMAN":?
250 ? "DO YOU WISH A DOS (DISK) VERSIO
N"
260 ? "OR A CASSETTE VERSION":? :? "PL
EASE ENTER D OR C"
270 INPUT A$:IF A$<>"C" AND A$<>"D" TH
EN 270
280 GOSUB 1000
290 IF A$="D" THEN 4000
300 REM CASSETTE VERSION
500 RESTORE 3000
510 ? CHR$(125):FOR I=1 TO 14:READ B$:
? B$:NEXT I
520 INPUT A$
530 ? "PRESS PLAY & RECORD":? "PRESS R
ETURN"
540 LIST "C:",2000,2200
550 RESTORE 10000
560 ? "PRESS PLAY & RECORD":? "PRESS R
ETURN"
570 OPEN #1,8,0,"C:"
580 FOR I=0 TO 23:READ A:NEXT I
590 READ S1:READ S2:ST=S1+256*S2
600 READ E1:READ E2:ED=E1+256*E2
610 ? #1,ED-ST
620 FOR I=0 TO ED-ST
630 READ A:IF A>255 THEN READ A
640 PUT #1,A
650 NEXT I
660 RESTORE 12000
670 FOR I=0 TO 1:READ A:NEXT I
680 READ S1:READ S2:ST=S1+256*S2
690 READ E1:READ E2:ED=E1+256*E2
700 ? #1,ED-ST
710 FOR I=0 TO ED-ST
720 READ A:IF A>255 THEN READ A
730 PUT #1,A
740 NEXT I
750 CLOSE #1
760 ? "CASSETTE FILE FINISHED":FOR I=1
 TO 500:NEXT I
770 GOTO 5000
780 END
1000 B=0:REM DATACHECK
1010 RESTORE 1500+B
1020 READ S:READ E
1030 IF S=999 THEN 1160
1040 RESTORE S
1050 FOR LINE=S TO E STEP 10
1060 POSITION 2,20:? "CHECKING LINE ";
LINE
1070 TOT=0
1080 FOR I=1 TO 20
1090 READ A:IF A>255 THEN POP :GOTO 11
30
1100 TOT=TOT+A
1110 NEXT I
1120 READ A
1130 IF A<>TOT THEN ? "DATA ERROR IN L
INE ";LINE:STOP
1140 NEXT LINE
1150 B=B+10:GOTO 1010
1160 ? "DATA OK"
1170 RETURN
1500 DATA 10000,10800
1510 DATA 11000,11010
1520 DATA 12000,12020
1530 DATA 999,999
2000 REM CALCULATOR LOAD PROGRAM
2010 DIM CALC$(2000)
2020 C=ADR(CALC$)
2030 ? CHR$(125):? :? "PRESS RETURN"
2040 OPEN #1,4,0,"C:"
2050 INPUT #1,ED
2060 FOR I=0 TO ED
2070 GET #1,A:POKE C+I,A
2080 NEXT I
2090 INPUT #1,ED
2100 FOR I=0 TO ED
2110 GET #1,A:POKE 1536+I,A
2120 NEXT I
2130 CLOSE #1
2140 X=USR(1536,C)
2150 ? "ALL DONE THIS PROGRAM WILL NOW
 SELF":? "DESTRUCT"
2160 FOR I=1 TO 500:NEXT I
2170 ? CHR$(125)
2180 NEW
3000 DATA CALCULATOR CASSETTE VERSION
3010 DATA ,THIS ROUTINE PRODUCES A LIS
TED
3020 DATA PROGRAM ON TAPE AND A DATA F
ILE
3030 DATA INSERT A BLANK TAPE AND FOLL
OW
3040 DATA THE INSTRUCTIONS.
3050 DATA TO USE THE TAPE TYPE ENTER"C
:"
3060 DATA THEN RUN THE PROGRAM.THE PRO
GRAM
3070 DATA NEWS ITSELF AFTER USE.
3080 DATA ,TO USE THE CALCULATOR FROM
BASIC
3090 DATA A SHORT PROGRAM WILL BE GIVE
N
3100 DATA AFTER CREATING THE PROGRAM T
APE.
3110 DATA PRESS RETURN
3500 DATA CALCULATOR DISK VERSION
3510 DATA ,THIS ROUTINE CREATES TWO M/
CODE FILES
3520 DATA D:AUTORUN.SYS & D:CALC.THESE
 WILL
3530 DATA OVERWRITE ANY CURRENT FILE O
F THE
3540 DATA SAME NAME. INSERT A BLANK FO
RMATTED
3550 DATA DISK AND PRESS RETURN TO CRE
ATE THE
3560 DATA FILES,
3570 DATA TO USE FROM DOS-BOOT WITH TH
E AUTORUN
3580 DATA DISK GOTO DOS AND USE OPTION
 L D:CALC
3590 DATA THE CALCULATOR WILL RUN. FRO
M BASIC
3600 DATA A USR ROUTINE WILL BE GIVEN
AFTER
3610 DATA THE FILE CREATION
3620 DATA PRESS RETURN
3999 REM DISC VERSION
4000 RESTORE 3500
4010 ? CHR$(125):FOR I=1 TO 15:READ B$
:? B$:NEXT I
4020 INPUT A$
4030 ? :? :? "NOW WRITING FILES,PLEASE
 WAIT"
4040 TRAP 4050:GOTO 4090
4050 CLOSE #1:? "THIS DISK IS WRITE PR
OTECTED,":? "MISSING,NOT FORMATED,UNCO
NNECTED"
4060 ? "PLEASE CURE AND PRESS RETURN"
4070 INPUT A$
4080 GOTO 4040
4090 OPEN #1,8,0,"D:AUTORUN.SYS"
4100 RESTORE 10000
4110 FOR LINE=10000 TO 10800 STEP 10
4120 FOR I=1 TO 21
4130 READ A:IF A>255 THEN POP :GOTO 41
60
4140 PUT #1,A
4150 NEXT I
4160 NEXT LINE
4170 CLOSE #1
4180 ? "AUTORUN.SYS  CREATED":? "NOW C
REATING CALC":? "PLEASE WAIT"
4190 TRAP 4200:GOTO 4240
4200 CLOSE #1:? "THIS DISK IS WRITE PR
OTECTED,":? "MISSING,NOT FORMATED,UNCO
NNECTED"
4210 ? "PLEASE CURE AND PRESS RETURN"
4220 INPUT A$
4230 GOTO 4190
4240 OPEN #1,8,0,"D:CALC"
4250 RESTORE 11000
4260 FOR LINE=11000 TO 11010 STEP 10
4270 FOR I=1 TO 21
4280 READ A:IF A>255 THEN POP :GOTO 43
10
4290 PUT #1,A
4300 NEXT I
4310 NEXT LINE
4320 CLOSE #1
4330 ? "CALC CREATED ":FOR I=1 TO 500:
NEXT I
4340 GOTO 5000
4999 REM USE FROM BASIC
5000 RESTORE 5500
5010 FOR PAGE=1 TO 3
5020 ? CHR$(125):FOR I=1 TO 22:READ B$
:? B$:NEXT I
5030 INPUT A$
5040 NEXT PAGE
5050 ? CHR$(125):END
5500 DATA USING THE CALCULATOR FROM BA
SIC
5510 DATA ,,THE CALCULATOR IS STORED U
```

```
NDER
5520 DATA THE BASIC ROM AND STARTS AT
$A000
5530 DATA 40960 dec. ANY MEANS OF ACCE
SSING
5540 DATA THE CALC. INVOLVES TURNING O
FF THE
5550 DATA BASIC ROM THEN JSR VIA $A000
 AND
5560 DATA ON RETURN REENABLE BASIC AND
 RTS TO
5570 DATA THE CALLING PROGRAM.
5580 DATA ,,,,, THE NEXT PAGE CONTAINS
 AN ASSEMBLY
5590 DATA LANGUAGE PROGRAM WHICH IS MO
VABLE.
5600 DATA THIS IS ACTUALLY THE SOURCE
CODE
5610 DATA OF D:CALC EXCEPT FOR THE FIR
ST PLA
5620 DATA ,,PRESS RETURN FOR THE NEXT
PAGE
5630 DATA ASSEMBLY LANGUAGE PROGRAM
5640 DATA ,10  *=$0600    ASSEMBLE FRO
M
5645 DATA 20 PORTB=$D301 ROM SWITCH AD
DRESS
5650 DATA 30  PLA        ONLY NEEDED F
ROM BASIC
5660 DATA 40  LDA PORTB
5670 DATA 50  ORA #2     TURN OFF BASI
C ROM
5680 DATA 60  STA  PORTB AND ENABLE TH
E RAM
5690 DATA 70  JSR $A000  START THE CAL
C
5700 DATA 80  LDA PORTB
5710 DATA 90  AND #253   TURN OFF RAM
5720 DATA 100  STA PORTB AND ENABLE BA
SIC
5730 DATA 110  RTS       RETURN TO PRO
GRAM
5740 DATA ,LEAVE OUT LINE 30 AND ASSEM
BLE TO
5750 DATA PRODUCE -CALC-.
5760 DATA TO RUN FROM BASIC A SMALL ST
RING MUST
5770 DATA BE MADE THEN CALLED WITH A U
SR
5780 DATA ROUTINE. A SUGGESTED ROUTINE
 IS ON
5790 DATA THE NEXT PAGE.,,PRESS RETURN
5800 DATA BASIC PROGRAM LISTING
5810 DATA ,ADD THESE LINES TO YOUR BAS
IC PROGRAM
5820 DATA ,10 DIM ML$(22)
5830 DATA 20 RESTORE 10000
5840 DATA 30 FOR I=1 TO 21:READ A
5850 DATA 40 ML$(I;I)=CHR$(A):NEXT I
5860 DATA 50 GOSUB 1000:REM CALL CALC
5870 DATA 1000 X=USR(ADR(ML$))
5880 DATA 1010 RETURN
5890 DATA 10000 DATA 104;173;1;211;9;2
;141;1
5900 DATA 10010 DATA 211;32;0;160;173;
1;211;41
5910 DATA 10020 DATA 253;141;1;211;96
5920 DATA ,REPLACE THE ; WITH COMMA'S.
GOSUB 1000
5930 DATA RUNS THE CALC. ALL THE LINE
NUMBERS
5940 DATA CAN BE CHANGED. JUST REMEMBE
R TO
5950 DATA CHANGE RESTORE AS WELL.
5960 DATA ,HAPPY CALCULATING,PRESS RET
URN TO END
10000 DATA 255,255,0,6,8,6,173,1,211,9
,2,141,1,211,96,226,2,227,2,0,1832
10010 DATA 6,255,255,0,160,29,166,32,1
68,160,32,86,160,32,17,160,76,196,160,
32,2182
10020 DATA 127,160,96,0,160,0,162,0,18
9,197,163,72,41,96,201,0,208,6,104,9,1
991
10030 DATA 64,76,52,160,201,32,208,6,1
04,233,32,76,52,160,201,64,240,246,104
,157,2468
10040 DATA 85,85,232,200,24,192,16,208
,215,24,160,0,173,53,160,105,24,141,53
,160,2310
10050 DATA 173,54,160,105,0,141,54,160
,224,240,208,192,96,160,0,162,0,189,85
,85,2488
10060 DATA 157,213,164,232,200,24,192,
16,208,243,24,160,0,173,91,160,105,24,
141,91,2618
10070 DATA 160,173,92,160,105,0,141,92
,160,224,240,208,220,96,160,0,162,0,18
9,213,2795
10080 DATA 164,157,85,85,232,200,24,19
2,16,208,243,24,160,0,173,135,160,105,
24,141,2528
10090 DATA 135,160,173,136,160,105,0,1
41,136,160,224,240,208,220,96,165,88,5
6,105,15,2723
10100 DATA 141,53,160,141,91,160,141,1
35,160,165,89,105,0,141,54,160,141,92,
160,141,2430
10110 DATA 136,160,96,32,202,160,76,25
3,160,169,0,141,229,165,141,231,165,14
1,230,165,3052
```



```
10120 DATA 141,196,163,141,232,165,141
,19,166,32,109,163,32,122,163,32,135,1
63,162,0,2477
10130 DATA 142,19,166,160,98,169,128,1
45,88,200,192,111,208,249,169,0,141,23
1,165,96,2877
10140 DATA 169,255,141,252,2,32,248,24
2,201,81,208,3,76,12,160,72,173,231,16
5,201,2924
10150 DATA 0,240,3,32,202,160,104,201,
65,208,3,32,202,160,201,69,208,3,76,36
,2205
10160 DATA 162,201,61,240,19,201,43,24
0,15,201,45,208,3,76,148,163,201,42,24
0,4,2513
10170 DATA 201,47,208,3,76,81,162,201,
48,240,43,201,49,240,39,201,50,240,35,
201,2566
10180 DATA 51,240,31,201,52,240,27,201
,53,240,23,201,54,240,19,201,55,240,15
,201,2585
10190 DATA 56,240,11,201,57,240,7,201,
46,240,6,76,253,160,76,125,161,205,19,
166,2546
10200 DATA 240,245,141,19,166,76,111,1
61,172,232,165,192,11,208,3,76,253,160
,238,232,3101
10210 DATA 165,172,229,165,192,0,208,5
3,160,8,42,46,245,165,46,244,165,46,24
3,165,2759
10220 DATA 46,242,165,46,241,165,46,24
0,165,46,239,165,46,238,165,46,237,165
,46,236,2985
10230 DATA 165,46,235,165,46,234,165,4
6,233,165,136,192,0,208,211,32,251,161

,76,253,3020
10240 DATA 160,160,8,42,46,10,166,46,9
,166,46,8,166,46,7,166,46,6,166,46,151
6
10250 DATA 5,166,46,4,166,46,3,166,46,
2,166,46,1,166,46,0,166,46,255,165,170
7
10260 DATA 46,254,165,136,192,0,208,21
1,32,251,161,76,253,160,24,165,88,105,
98,141,2766
10270 DATA 28,162,165,89,105,0,141,29,
162,172,229,165,162,12,189,233,165,192
,0,240,2640
10280 DATA 3,189,254,165,105,95,157,85
,85,202,224,0,208,236,96,174,229,165,2
24,0,2896
10290 DATA 208,19,169,0,141,232,165,32
,109,163,169,0,141,19,166,32,251,161,7
6,253,2506
10300 DATA 160,169,0,141,232,165,32,12
2,163,169,0,141,19,166,32,251,161,76,2
53,160,2612
10310 DATA 162,0,142,19,166,174,230,16
5,224,0,240,3,76,122,162,201,61,240,19
,141,2547
10320 DATA 230,165,169,1,141,229,165,1
69,0,141,232,165,32,231,160,76,253,160
,76,196,2991
10330 DATA 160,141,196,163,32,68,218,3
2,70,218,169,254,133,243,169,165,133,2
44,169,0,2977
10340 DATA 133,242,32,0,216,32,182,221
,32,68,218,169,233,133,243,169,165,133
,244,169,3034
10350 DATA 0,133,242,32,0,216,173,230,
165,201,42,240,26,201,43,240,10,201,45
,240,2680
10360 DATA 12,32,40,219,76,203,162,32,
102,218,76,203,162,32,96,218,76,203,16
2,32,2356
10370 DATA 219,218,32,230,216,32,109,1
63,32,122,163,32,135,163,169,127,141,2
24,162,141,2830
10380 DATA 248,162,173,127,5,201,0,240
,4,201,48,208,9,238,224,162,238,248,16
2,76,2974
10390 DATA 223,162,162,0,160,0,189,127
,5,72,41,128,201,128,208,2,160,255,104
,41,2368
10400 DATA 127,201,69,208,25,32,135,16
3,162,255,232,189,20,166,157,175,163,2
24,10,208,2921
10410 DATA 245,169,1,141,231,165,169,3
2,160,255,157,175,163,232,192,255,208,
204,202,160,3516
10420 DATA 12,189,175,163,153,233,165,
224,0,240,5,202,136,76,46,163,173,196,
163,201,2915
10430 DATA 61,240,25,141,230,165,169,0
,141,196,163,141,232,165,141,229,165,3
2,251,161,3048
10440 DATA 169,1,141,229,165,76,253,16
0,169,1,141,231,165,169,0,141,229,165,
32,251,2888
10450 DATA 161,76,253,160,169,32,162,0
,157,233,165,232,224,14,208,248,96,169
,32,162,2953
10460 DATA 0,157,254,165,232,224,14,20
8,248,96,169,32,162,0,157,175,163,232,
224,14,2926
10470 DATA 208,248,96,174,232,165,224,
0,208,14,174,229,165,224,0,240,10,174,
230,165,3180
10480 DATA 224,0,208,3,76,81,162,76,12
5,161,48,48,48,48,48,48,48,48,48,48,15
96
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```
10490 DATA 48,48,48,48,48,48,48,48,48,
48,48,0,6,13,13,13,13,13,13,13,625
10500 DATA 13,13,13,13,13,13,13,7,22,3
2,32,32,32,32,32,32,32,32,32,32,472
10510 DATA 32,32,32,2,22,160,160,160,1
60,160,160,160,160,160,160,160,160,160
,160,2,2362
10520 DATA 22,32,32,32,32,32,32,32,32,
32,32,32,32,32,32,2,22,32,65,61,652
10530 DATA 67,65,32,32,32,69,61,67,69,
32,32,2,22,32,81,61,69,88,73,84,1070
10540 DATA 32,32,32,32,32,32,32,2,22,3
2,32,32,32,32,32,32,32,32,32,32,600
10550 DATA 32,32,32,2,22,32,32,183,32,
184,32,185,32,32,175,32,32,32,32,2,116
9
10560 DATA 22,32,32,32,32,32,32,32,32,
32,32,32,32,32,32,2,22,32,32,180,738
10570 DATA 32,181,32,182,32,32,170,32,
32,32,32,2,22,32,32,32,32,32,32,32,103
7
10580 DATA 32,32,32,32,32,32,32,2,22,3
2,32,177,32,178,32,179,32,32,173,32,11
79
10590 DATA 32,32,32,2,22,32,32,32,32,3
2,32,32,32,32,32,32,32,32,32,2,570
10600 DATA 22,32,32,32,32,32,32,32,32,
32,32,32,32,32,32,2,7,14,14,14,521
10610 DATA 14,14,14,14,14,14,14,14,14,
14,14,6,32,32,32,32,32,32,32,32,416
10620 DATA 32,32,32,32,32,32,32,32,32,
32,32,32,32,32,32,32,32,32,32,32,640
10630 DATA 32,32,32,32,32,32,32,32,32,
32,32,32,32,32,32,32,32,32,32,32,640
10640 DATA 32,32,32,32,32,32,32,32,32,
32,32,32,32,32,32,32,32,32,32,32,640
10650 DATA 32,32,32,32,32,32,32,32,32,
32,32,32,32,32,32,32,32,32,32,32,640
10660 DATA 32,32,32,32,32,32,32,32,32,
32,32,32,32,32,32,32,32,32,32,32,640
10670 DATA 32,32,32,32,32,32,32,32,32,
32,32,32,32,32,32,32,32,32,32,32,640
10680 DATA 32,32,32,32,32,32,32,32,32,
32,32,32,32,32,32,32,32,32,32,32,640
10690 DATA 32,32,32,32,32,32,32,32,32,
32,32,32,32,32,32,32,32,32,32,32,640
10700 DATA 32,32,32,32,32,32,32,32,32,
32,32,32,32,32,32,32,32,32,32,32,640
10710 DATA 32,32,32,32,32,32,32,32,32,
32,32,32,32,32,32,32,32,32,32,32,640
10720 DATA 32,32,32,32,32,32,32,32,32,
32,32,32,32,32,32,32,32,32,32,32,640
10730 DATA 32,32,32,32,32,32,32,32,32,
32,32,32,32,32,32,32,32,32,32,32,640
10740 DATA 32,32,32,32,32,32,32,32,32,
32,32,32,32,32,32,32,32,32,32,32,640
10750 DATA 32,32,32,32,32,32,32,32,32,
32,32,32,32,32,32,32,32,32,32,32,640
10760 DATA 32,32,32,32,32,32,32,32,32,
32,32,32,32,32,32,32,0,0,0,0,512
10770 DATA 32,32,32,32,32,32,32,32,32,
32,32,32,32,32,32,32,32,32,32,32,640
10780 DATA 32,32,32,32,32,32,32,32,32,
32,32,32,32,32,32,32,32,32,32,32,640
10790 DATA 32,32,0,79,86,69,82,32,82,6
5,78,71,69,255,255,0,6,8,6,173,1480
10800 DATA 1,211,41,253,141,1,211,96,2
26,2,227,2,0,6,1418
11000 DATA 255,255,0,6,19,6,173,1,211,
9,2,141,1,211,32,0,160,173,1,211,1867
11010 DATA 41,253,141,1,211,96,226,2,2
27,2,0,6,1206
12000 DATA 255,255,0,6,51,6,173,1,211,
9,2,141,1,211,104,104,141,23,6,104,180
4
12010 DATA 141,22,6,162,0,160,0,185,85
,85,153,0,160,200,192,0,208,245,232,23
8,2474
12020 DATA 23,6,238,26,6,224,8,208,232
,173,1,211,41,253,141,1,211,96,2099
```

Get it right!

LINE	CHSUM	LINE	CHSUM	LINE	CHSUM
10	4273	20	3503	30	5371
40	3503	50	4891	60	3503
70	4822	80	3503	90	4273
100	871	110	5967	120	5614
130	6174	140	4897	150	6491
160	6597	170	5813	180	6080
190	871	200	6184	210	871
220	2347	230	1737	240	9953
250	7056	260	9936	270	6742
280	1925	290	3337	300	4258
500	2276	510	7837	520	1644
530	7751	540	3304	550	2458
560	7751	570	2670	580	4916
590	5354	600	5094	610	1704
620	2882	630	5112	640	1468
650	1345	660	2460	670	4943
680	5354	690	5094	700	1704
710	2882	720	5112	730	1468
740	1345	750	1559	760	9213
770	1856	780	836	1000	3232
1010	2773	1020	2621	1030	3073
1040	2148	1050	4355	1060	7134
1070	1126	1080	2272	1090	6780
1100	2069	1110	1345	1120	1165
1130	9424	1140	2227	1150	2743
1160	1824	1170	1498	1500	2629
1510	2597	1520	2605	1530	2131
2000	5746	2010	2485	2020	2214
2030	5468	2040	2650	2050	2031
2060	2406	2070	3464	2080	1345
2090	2031	2100	2406	2110	3686
2120	1345	2130	1559	2140	2429
2150	10165	2160	3892	2170	1737
2180	903	3000	6982	3010	7528
3020	7157	3030	7109	3040	4640
3050	7212	3060	7704	3070	5591
3080	7484	3090	7092	3100	7575
3110	3725	3500	6105	3510	8864
3520	7795	3530	8032	3540	8425
3550	8469	3560	2235	3570	8875
3580	8436	3590	8522	3600	7628
3610	4339	3620	3725	3999	3164
4000	2281	4010	7838	4020	1644
4030	7568	4040	3754	4050	16143
4060	6500	4070	1644	4080	1870
4090	5165	4100	2458	4110	5204
4120	2276	4130	6804	4140	1468
4150	1345	4160	2227	4170	1559
4180	12019	4190	3726	4200	16143
4210	6500	4220	1644	4230	1893

LINE	CHSUM	LINE	CHSUM	LINE	CHSUM
4240	3609	4250	2459	4260	5194
4270	2276	4280	6787	4290	1468
4300	1345	4310	2227	4320	1559
4330	7200	4340	1856	4999	3454
5000	2291	5010	2793	5020	7840
5030	1644	5040	2183	5050	2709
5500	7640	5510	7796	5520	7247
5530	7880	5540	8075	5550	6974
5560	8152	5570	5174	5580	9097
5590	8103	5600	7634	5610	8166
5620	7527	5630	6339	5640	6135
5645	7446	5650	7308	5660	3286
5670	6659	5680	7089	5690	6202
5700	3294	5710	5383	5720	6775
5730	6854	5740	7743	5750	3861
5760	8489	5770	7048	5780	8269
5790	6656	5800	5464	5810	9248
5820	3360	5830	3907	5840	5109
5850	5748	5860	5724	5870	4727
5880	3136	5890	6659	5900	6784
5910	5379	5920	8320	5930	7934
5940	7521	5950	5802	5960	9132
0000	9961	10010	11765	10020	11081
0030	12110	10040	12054	10050	11891
0060	12193	10070	12162	10080	12217
0090	12547	10100	12343	10110	12802
0120	12538	10130	12684	10140	12203
0150	11303	10160	11763	10170	11770
0180	11997	10190	11859	10200	12582
0210	12283	10220	12519	10230	12410
0240	10851	10250	10826	10260	12351
0270	12279	10280	12337	10290	12212
0300	12149	10310	12031	10320	12435
0330	12601	10340	12589	10350	11989
0360	12084	10370	12865	10380	12105
0390	11753	10400	12951	10410	12966
0420	12405	10430	12868	10440	12294
0450	12435	10460	12329	10470	12380
0480	11098	10490	10096	10500	9991
0510	12102	10520	10032	10530	10454
0540	9983	10550	10645	10560	10268
0570	10599	10580	10891	10590	9852
0600	9879	10610	10031	10620	10212
0630	10212	10640	10212	10650	10212
0660	10212	10670	10212	10680	10212
0690	10212	10700	10212	10710	10212
0720	10212	10730	10212	10740	10212
0750	10212	10760	9674	10770	10212
0780	10212	10790	10244	10800	7722
1000	10603	11010	6927	12000	10680
2010	11502	12020	10150		

Program II

```
10 DIM ML$(22)
20 RESTORE 10000
30 FOR I=1 TO 21:READ A
40 ML$(I,I)=CHR$(A):NEXT I
50 GOSUB 1000:REM CALL CALC
999 STOP
1000 X=USR(ADR(ML$))
1010 RETURN
10000 DATA 104,173,1,211,9,2,141,1
10010 DATA 211,32,0,160,173,1,211,41
10020 DATA 253,141,1,211,96
```

Get it right!

LINE	CHSUM	LINE	CHSUM	LINE	CHSUM
10	1734	20	2458	30	3478
40	4030	50	4993	999	1198
1000	2997	1010	1498	10000	4360
10010	4621	10020	3332		

CONSOLE KEY INTERRUPT DRIVER

from STEVEN CHEUNG

THIS very interesting little program, written entirely in machine code, enables you to adjust various system control registers by using the Console keys – Start, Select, Option and Help. As written, it will only function fully on an XL or XE, although the luminance change command should work on older systems.

Type in the Basic program as listed and RUN it. This will then POKE the data for the interrupt routine into page 6, then enable it with USR(1536). You may now delete the Basic program by typing NEW, and the machine code will continue to run until you press Reset or turn the computer off.

Lines 10 and 20 translate the compressed machine code data into valid numbers ready to be POKEd into location 1536 onwards.

Lines 30 and 40 contain the actual machine code data while Line 50 starts the program running with A=USR(1536) and also contains the last few bytes of data.

After enabling it, you may operate the routine by pressing the following keys:

Start: Toggles the international character set on and off.

Select: Cycles through the various text luminance values.

Option: Toggles the keyboard click on and off.

Help: Toggles the left margin between 0 and 2 (in the same manner as POKE 82,0 and POKE 82,2 would).

```
10 DIM H(22),A$(53*2):FOR L=0 TO 9:H(L
)=L:NEXT L:FOR L=17 TO 22:H(L)=L-7:NEX
T L:TRAP 30:FOR L1=0 TO 2:READ A$
20 FOR L=0 TO 52:POKE 1536+L+L1*53,H(A
SC(A$(L*2+1,L*2+1))-48)*16+H(ASC(A$(L*
2+2,L*2+2))-48):NEXT L:NEXT L1
30 DATA 68A907A00BA206205CE460ADDC02C9
11D00EA5524902855 2A9008DDC024C62E4AD1F
D0C5D1D0034C62E485D1C904D0032077E4C903
40 DATA D00DADDB0229014901 8DDB024C62E4
C905D009EEC502EEC5024C62E4C906D017ADF4
02C9E0D008A9CC8DF4024C62E4A9E08DF4024C
50 A=USR(1536):DATA 62E44C62E40000
```

Get it right!

LINE CHSUM	LINE CHSUM	LINE CHSUM
10 18748	20 16955	30 18982
40 18917	50 5346	

DECIMAL TO HEXADECIMAL CONVERTER

from G. WATSON

This five-liner will accept a decimal number from 0 to 65535 and convert it into its hexadecimal equivalent instantly. After it has been POKEd into memory, the routine may be accessed at any time by using:

A=USR(1600,number)

For those of you interested in machine code, it works in the following manner:

The number to be converted is divided by 256 and pushed on to the stack by the USR statement. The low byte goes on first, then the high byte.

The high byte is then pulled off the stack by the routine and divided by 16. This number is then used as an index through a table of Ascii values of the hexadecminal numbers from 0 to F. This resultant digit is then printed to the screen by using the rom routine at address $F2B0. Please note that this routine may be located in a different place on older machines.

The remainder of the division is then used to index through the same table and the number is again printed in the same way. The low byte is then pulled off the stack and the process is repeated.

```
PRINT  =$F2B0
       *=$0640
START  PLA
       LDA #$02
       STA COUNT
LOOP1  PLA
       STA ONE
       LDA #$00
       STA TWO
       LDX #$04
LOOP2  CLC
       LSR ONE
       ROR TWO
       DEX
       BNE LOOP2
       LSR TWO
       LSR TWO
       LSR TWO
       LSR TWO
       LDX ONE
       LDA TABLE,X
       JSR PRINT
       LDX TWO
       LDA TABLE,X
       JSR PRINT
       DEC COUNT
       BNE LOOP1
       RTS
ONE    .BYTE $FF
TWO    .BYTE $FF
COUNT  .BYTE $FF
TABLE  .BYTE $30,$31,$32,$33,$34,$35,$36,$37
       .BYTE $38,$39,$41,$42,$43,$44,$45,$46
```

```
10 FOR X=1600 TO 1681:READ A:POKE X,A:
NEXT X
20 DATA 104,169,2,141,129,6,104,141,12
7,6,169,0,141,128,6,162,4,24,78,127,6,
110,128,6,202,208,246,78,128,6
30 DATA 78,128,6,78,128,6,78,128,6,174
,127,6,189,130,6,32,176,242,174,128,6,
189,130,6,32,176,242,206,129,6,208
40 DATA 200,96,255,255,255,48,49,50,51
,52,53,54,55,56,57,65,66,67,68,69,70
50 ? :? "ENTER DECIMAL NUMBER: ";:INPU
T DEC:? :? :? DEC;" IN HEX IS $";:A=US
R(1600,DEC):?
```

Get it right!

LINE CHSUM	LINE CHSUM	LINE CHSUM
10 7619	20 15457	30 16193
40 10913	50 15780	

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AT5

MEGAPAC

520 STFM SYSTEM BY A.S.&T.

The new 520 STFM from ATARI has been an instant hit since its announcement. The design has gained from experience with earlier ST and STM machines and the result is a practical and superbly engineered computer that will easily find its place in your home as well as in your business.

MEMORY:

The basic 520 STFM has 192K bytes of ROM, an optional 128K bytes of plug-in ROM cartridges and 512K of RAM. The MEGAPAC 520 STFM has bigger memory — a full ONE MEGABYTE of RAM, like the 1040 STF.

DISC DRIVES:

The basic 520 STFM has a built-in single-sided disc drive. The MEGAPAC 520-STFM comes with two drives, one internal and one external. The latter is double-sided, offering twice the capacity (720K) of the built-in drive (360K). Your disc bill can be cut by almost half when compared with that of basic 520 STFM users.

PROCESSOR:

The Central Processor unit (CPU) is a Motorola 16/32 bit 68000 chip, running at a clock speed of 8 MHz. It is further enhanced by Atari's own custom ICs providing a Direct Memory Access (DMA) channel for fast data transfer with other peripherals such as the ATARI SH204 Winchester drive or the Atari Laser printer (available soon) and a real time clock.

DISPLAY:

The 520 STFM can display 40 or 80 column text on any domestic TV or colour monitor such as the Philips CM8533 or the dedicated ATARI SM125 high resolution monochrome monitor. Graphic is 600 × 400 pixels on the SM125, 600 × 200 pixels in 4 colours or 320 × 200 pixels in 16 colours on a colour monitor or TV. The colour palette contains 512 possible colours. Some ATARI software indeed uses the exceptional display hardware to produce stunning graphics with up to 256 colours at once.

MIDI INTERFACE:

The 520 STFM has 3 programmable sound voices and a Musical Instrument Digital Interface (MIDI) to allow direct connection to a wide range of musical organs and synthesizers such as the Casio CZ230S.

MOUSE:

The 520 STFM has its own dedicated mouse as part of its standard hardware.

PERIPHERAL CONNECTORS:

The 520 STFM can be easily expanded by plugging in 'add-ons' through its ports. They will accept printer (Centronics port), Modem (RS232 port), musical instruments (Midi port), sensors (joystick port) and fast intelligent devices such as network, Winchesters, laser printer etc (SCSI port).

BUILT-IN SOFTWARE IN ROM:

The 520 STFM has 192K bytes of permanent software in ROM. This comprises GEMDOS, the disc operating software which is now becoming the dominating standard for 16 bit computers, and GEM, the Graphic Environment which uses pictures and drawing instead of cryptic messages to communicate with the user and the electronic Mouse in place of the keyboard to enter the user's commands.

SOFTWARE ON 5 DISCS:

The MEGAPAC 520 STFM comes with 5 discs, containing an impressive collection of software by any standard:
Disc number 1: contains the BASIC language.
Disc number 2: contains LOGO, + DOODLE + MEGAROIDS. and STWRITER a WORDPROCESSOR program.
Disc number 3: contains Neochrome, a painting program and demo pictures.
Disc number 4: contains CPM utilities.
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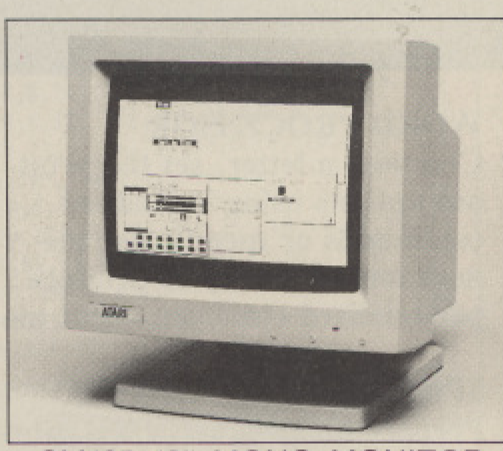
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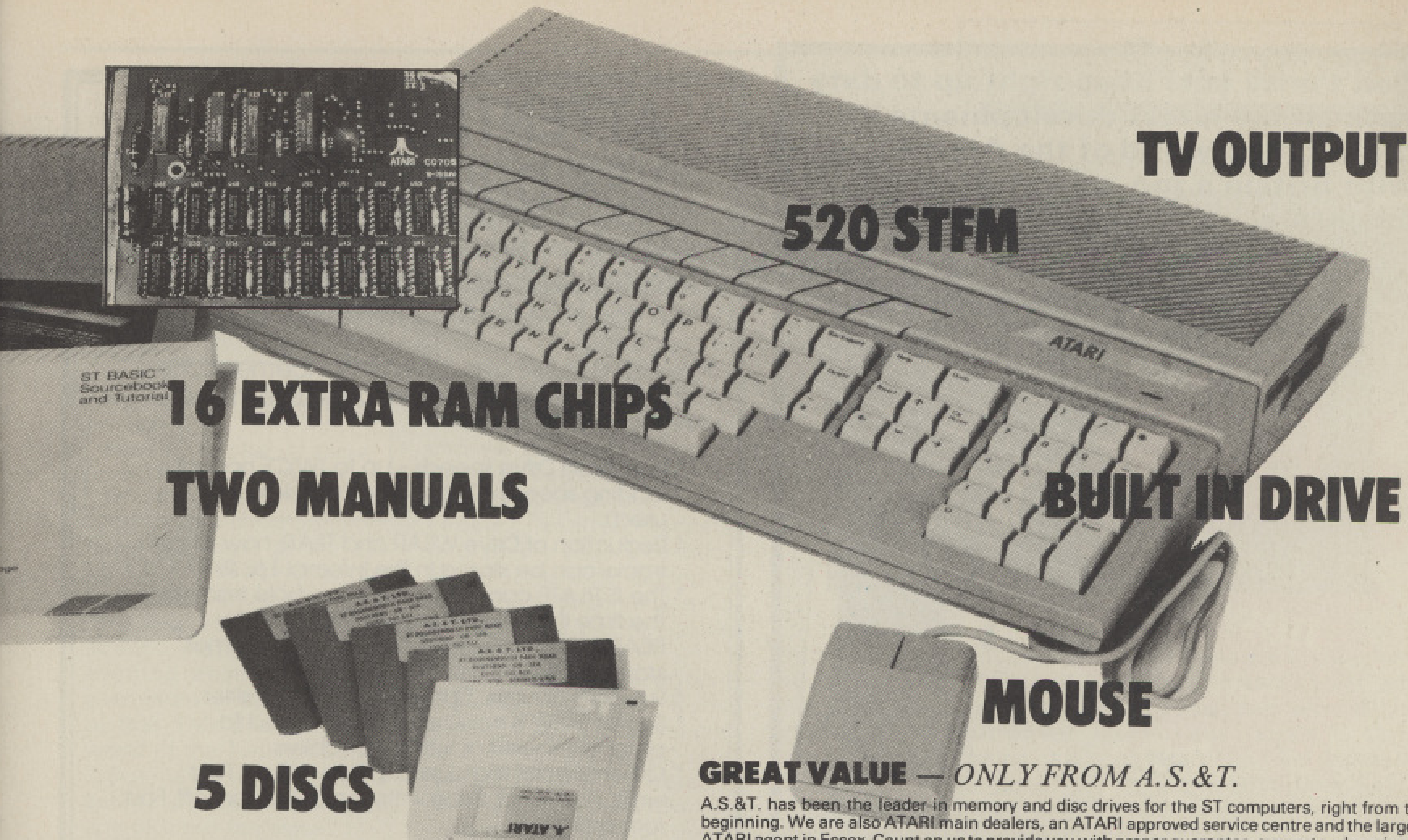
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AT6

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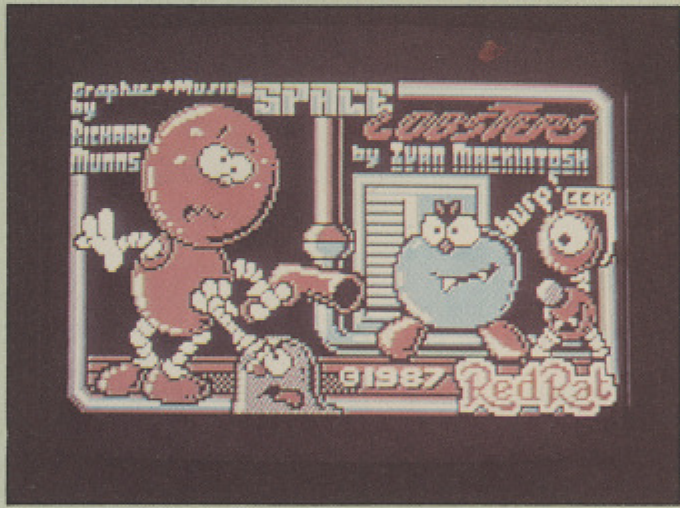
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Tel: (0903) 40509 (24hrs)
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Lively lobsters



Program: Space Lobsters
Price: £7.95 (cassette) £9.95 (disc)
Supplier: Red Rat, 11 Fennel St, Manchester M4 3DU.
Tel: 061-834 4941

I'VE seen most of the science fiction films Hollywood has churned out over the last few years. I've also spent many a happy evening absorbed in the seemingly endless re-runs of Star Trek and the weird world of the Twilight Zone.

But never have I come across Space Lobsters in any of these fantasies.

In this game Captain Crumble has to fight off these spacial crustaceans and other guardians of the Colossus spaceship to discover hidden computer codes to facilitate his escape, should he become overwhelmed.

With limited ammunition, and via the use of teleport booths, Captain Crumble (surprisingly quite a tough cookie, really) travels through the various corridor levels of the ship, exploring more than 150 screens in his quest to find the 10 elusive computer codes.

Hindering his progress are the roaming Robo Droids, ancient descendants of the Rubu Druids, and famed for their problems with vowel pronunciation (and spelling) – but that's another story.

Captain Crumble has to blast his way from level to level, occasionally trading points for supplies on his way.

Clever use of split-screen graphics has produced a mixture of hi-res and character-based graphics, with good animation of Captain Crumble being the main feature of the game.

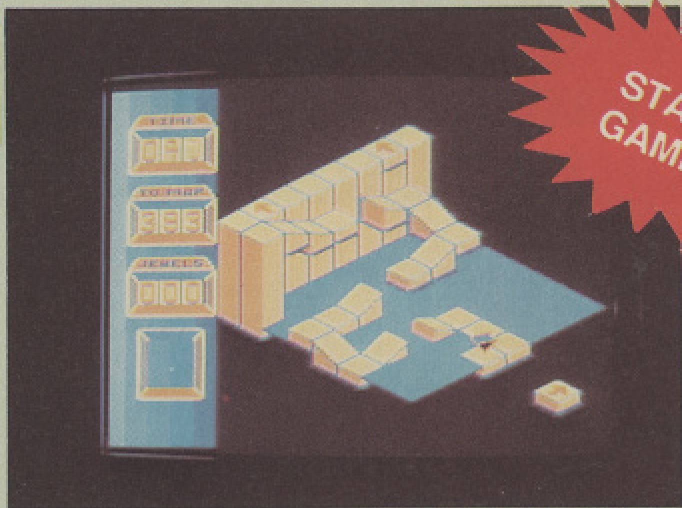
Excellent title music and good sound effects serve to confirm the view that there is still a market for reasonably-priced software, although the charts seem to indicate that true budget Atari software is now the order of the day.

But if you are looking for a good, animated "blast 'em, run away, turn around and shoot'em again" style game, with a mild degree of tactics to boot, then Space Lobsters might just be your cup of soup.

Victor Laszlo

Sound	*7*
Graphics	*7*
Playability	*8*
Value for money	*7*
Overall	*7*

Against the clock



STAR GAME

Program: Spindizzy
Price: £9.99 (cassette) £14.99 (disc)
Supplier: Electric Dreams, 31 Carlton Crescent, Southampton, Hampshire SO1 2EW.
Tel: 0703 229694

SPINDIZZY is a Marble Madness clone which involves guiding an inverted pyramid around the different screens, mapping them out and collecting any jewels along the way.

You play against a clock, which doesn't even pause when you plummet to your death – you lose a precious five seconds as well as a life.

If you collect one of the many jewels strewn about the screens, you gain 10 seconds, and you also get a bonus of seven seconds each time you enter a new screen.

Occasionally you may encounter a couple of nasty creatures who push you out of the room and zap your time; avoid these at all costs.

You can call up a map at any time to show you your relative position in the game, any unmapped rooms, mapped rooms with a jewel in, and completed rooms. There are more than 350 to visit.

A nice feature is that if you lose sight of yourself on the screen you can turn your viewpoint round so that you can see all angles of the room, or you can point yourself north.

To make life on some screens a whole lot easier, there are lifts which can take you up to a higher ledge, which would be otherwise inaccessible without searching many other screens for a ramp.

A word of warning about the lifts: To get some of them to work you have to find and collect the object which is depicted on the lift's surface.

When you need a bit more speed to jump over a gap in the pathway or climb a big hill, there is always the speed boost, which is activated by holding down the fire button. This sends the pyramid flying along, but it's easy to overdo it and overshoot your target or crash.

Thankfully you can press the emergency stop key (the spacebar) to stop you dead on any surface with grip, which excludes ice, water and trampolines.

Talking of trampolines, you can use these to bounce over to an area impossible to reach by any other means.

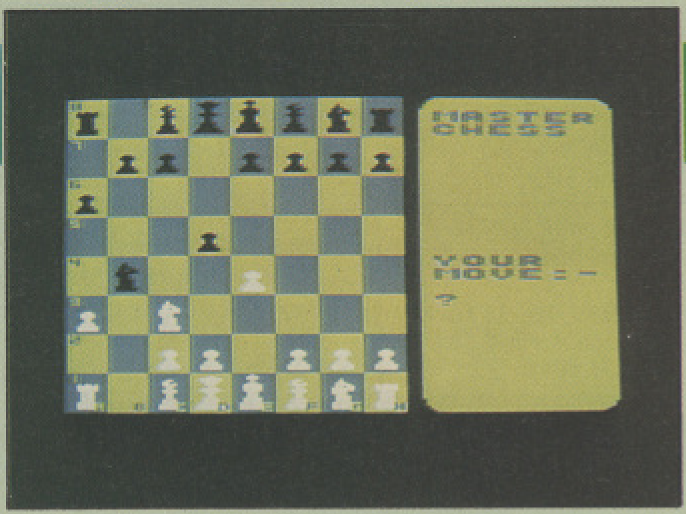
The 3D graphics are probably the best I've ever seen and the sound effects quite realistic, but you don't hear them very often. This is a shame as they enhance the game greatly. Another minor grumble is that there is no music whatsoever.

Despite these minor niggles this is an excellent game which will keep you coming back for more for many weeks to come.

Stephen Banks

Sound	*6*
Graphics	*10*
Playability	*9*
Value for money	*10*
Overall	*9*

Beginners chess



Program: Master Chess
Price: £1.99
Supplier: Mastertronic, 8-10 Paul Street, London EC2A 4JH.
Tel: 01-377 6880

AS far as I'm concerned, no home computer should be without a chess program, but cost may be a deterrent to some would-be Karpovs. Attempting to fill a gap at the low-cost end of the market is this no-frills chess playing program from Mastertronic.

Available for the Atari 800 and 130 series, Master Chess offers you the game, plain and simple. Given the price, you won't be surprised to hear that it has few of the extras you'll find on more expensive offerings.

The grey and green chessboard fills the left two-thirds of the screen while the remainder is used for entering your move and for the computer's messages.

You input your moves using standard algebraic notation via the keyboard, so typing E2 E4 moves your king's pawn forward two squares. The black and white pieces are clear and easily identifiable.

At the start of a game you are asked whether you want to play black or white, then you set the skill level by entering the number of seconds allowed for the computer's thinking time.

There are several options available from a separate screen, reached by pressing Return when it is your turn to move. From here you can reset the skill level, set up or rearrange the board (useful for taking back mistakes or bad moves), have an action replay of a game, and load, save or play a new game.

The last six moves for both sides are listed on the options screen, along with a pictorial representation of all pieces that have been captured.

The program does not appear to have an openings book and can make some very strange moves on the lower response settings.

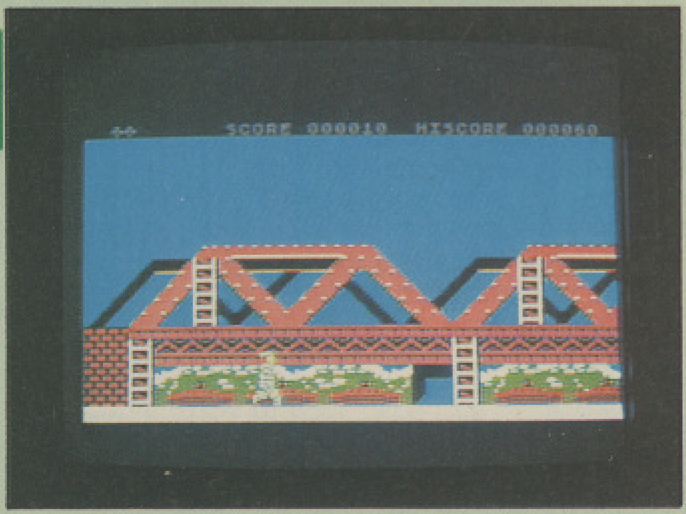
If you just want a cheap program to play against and one which is fairly easy to beat, this could be just the ticket.

For any serious chess player or as a better long term investment, I would advise you to save your pennies for a far more sophisticated program, such as Colossus which, although more expensive, offers far better value for money.

Bob Chappell

Sound	5
Graphics	7
Playability	7
Value for money	5
Overall	6

Rambo in green



Program: Green Beret
Price: £9.95 (cassette)
Supplier: Imagine Software, 6 Central Street, Manchester M2 5NS.
Tel: 061-832 6633

"HEEYYYY! Don't push me!". Yes, you guessed it – another Rambo-type shoot-'em-up. Predictably, your mission is to rescue hostages captured by the enemy forces.

It's no picnic either as the enemy are out to stop you with all the armed forces they can muster.

Green Beret is based on an arcade game so there are inevitably some compromises in this 8 bit conversion. But Imagine has done a pretty fine job in this, its first release for the Atari in quite a long time.

During the game you progress through the scenes which scroll smoothly from right to left. Enemy soldiers run towards you from different directions, intent on your capture.

Some will take pot-shots at you with rifles, while others try to fell you with a kung-fu flying kick. You can despatch them with your knife, operated by the fire button. However the response to the button is slow, calling for good timing.

If you come across white soldiers and kill them you will be provided with a bazooka holding four rounds. This can be fired in either direction by pressing the spacebar at the crucial moment, taking out all the men in that direction.

Some parts of the arcade game, such as the mortar crews and ground mines, seem to have disappeared. However if they had been included it might have made the game a little too difficult, as Green Beret is quite challenging as it stands.

One funny moment is provided at the end of the second stage. In the arcade game you are attacked by Doberman and Alsatian guard dogs.

The programmers have retained this feature, but the attacking dogs look like emaciated Yorkshire terriers.

The background graphics are detailed and colourful and rate as excellent. However I was a little disappointed with the graphics of the figures. These were a little too big and lacked detail.

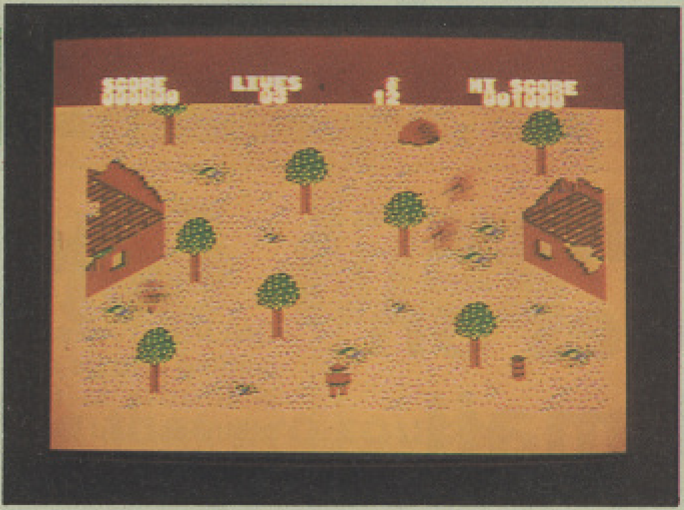
There is no music, though the game starts with a wail of sirens followed by a drum rhythm which accompanies you throughout, adding to the atmosphere. Sound effects are limited and could have been better.

All in all, a good game which should sell well. Hopefully just the first of many new conversions from Imagine.

Mark Fowlis

Sound	5
Graphics	8
Playability	8
Value for Money	7
Overall	8

Not daring enough



Program: *Who Dares Wins II*
Price: £7.95
Supplier: Tynesoft, Addison Industrial Estate, Blaydon upon Tyne, Tyne and Wear NE21 4TE.
Telephone: 091-414 4611

WHO Dares Wins II is very much a Commando clone – run to the top of the screen and shoot anything that moves.

You start in the middle of a forest, looking a bit short, squat and silly – rather like Lewis Collins in the film of the same title.

The term forest is perhaps a bit of an overstatement, as it comprises of a sparse collection of kids' lollipop trees. Indeed, the graphics generally have a child-like look to them and the colours used are rather dreary too.

All around enemy soldiers are shooting away at random. You must break through their ranks, travelling up the screen towards the end of the zone a few screens further on.

Apart from the trees and soldiers, the scenery shows bombed-out buildings and various discarded oil drums. No cover or protection is afforded by any of these objects – bullets pass straight through them all.

Indeed, you can even walk through some of the walls, which certainly doesn't add to the game's realism.

Dodging the flying bullets, you can return fire, either with your gun or your pack of 12 grenades. When the enemy is shot, you are treated to what looks like a brief rendition of "Mammy" as the unfortunate soul writhes in his death throes before expiring.

Further along you encounter helicopters and armoured cars. There are also ponds to be avoided – you'll drown if you tumble into one. Eventually you reach the end of the zone, a guard post and barrier crossing.

Movement is slightly on the slow side, and the speed of your bullets frustratingly so. Throughout the game the computer bleeps out a banal ditty, stretching the Atari's sound capabilities about as much as the visuals do its graphic abilities – not a lot.

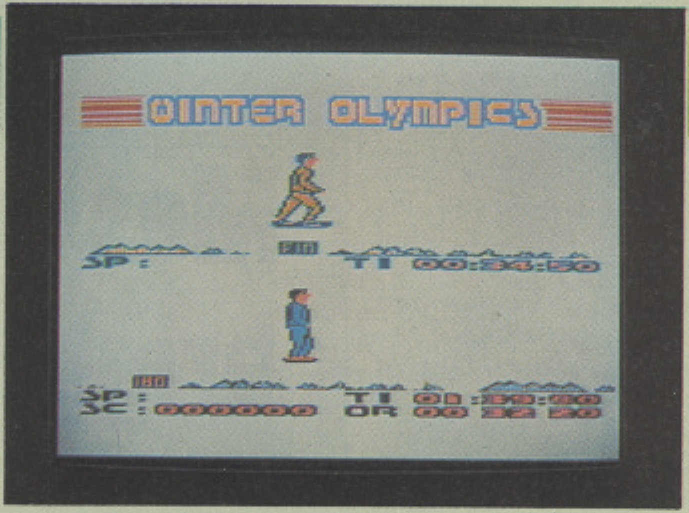
Although the game is playable, to my mind there are better versions around. It is not uncommon that a good game concept is spoiled by not being carried through thoroughly enough.

I recently reviewed Gun Law which is almost identical to Who Dares Wins II. Although by no means perfect, it was altogether more pleasing and was around a quarter of the price.

Niels Reynolds

Sound	5
Graphics	5
Playability	7
Value for money	6
Overall	6

Out in the cold



Program: *Winter Olympics*
Price: £7.95 (cassette) £9.95 (disc)
Supplier: Tynesoft, Addison Industrial Estate, Blaydon upon Tyne, Tyne and Wear NE21 4TE.
Telephone: 091-414 4611

WINTER Olympics from Tynesoft is another event compilation following on the heels of Summer Games, Winter Games, Decathlon and so on. There are five events – speed skating, ski slalom, ski jump, downhill and the Cresta Run bobsleigh.

Speed skating is a straight-line race against the clock. There is a computer controlled opponent in the top half of a split screen and, although this may help you pace the race, it would have added more to the game to have allowed a two player option.

Movement is achieved by frenetic waggling of the joystick.

In the slalom event the scenery, consisting of a rather sparsely-wooded forest, scrolls smoothly upwards.

You steer your skier through gates marked by two poles, but hitting a pole incurs a time penalty and colliding with a tree means the end of the heat.

Next comes the ski jump. Accelerating down the slope, you press the fire button to jump, the aim being to leap as far as possible.

As in the speed skating event, how much you want to risk scrapping your joystick determines your terminal velocity.

The downhill race is virtually identical to the slalom. There are no gates to steer through, but some slight deviations in the course marked by trees.

The last event of Winter Olympics is the Cresta Run in which there are two views of the race.

One is a plan view of the whole course, by which you can see how far you have progressed. The second and smaller outlook is from behind the bobsleigh, looking down the ice tunnel.

This is poorly done – the graphics are blocky and over simplistic, and the movement jerky. Speed is gained by sledging as close as possible to the rim of the wall around the bends

Winter Olympics sounds evocative of excitement, daring and great fun. Unfortunately Tynesoft fails to deliver, as the individual games lack attention to detail and atmosphere.

Niels Reynolds

Sound	4
Graphics	5
Playability	6
Value for money	6
Overall	5

MicroLink in association with TELECOM GOLD NEWSLETTER

Chess goes on Email

SCHOOLBOY Michael Hennigan has emerged triumphant at the end of the first major chess tournament conducted via electronic mail.

Michael, aged 16, from City of London School beat Aaron Summerscales, 17, of Elliot School, Richmond, in the final of the British Chess Federation under-18 quick play individual championships.

The last three rounds of the tournament, which attracted 560 entrants, were staged on the MicroLink system and shown move by move on national television.

MicroLink provided individual electronic mailboxes for each competitor and linked them to Ceefax on BBC Television. Every move in each game was shown as it happened.

Moves were transmitted between opponents as MicroLink express mail messages, at the same time registering at Ceefax and with the match arbiter.

It was a major test of MicroLink's speed and efficiency – the eight competitors in the quarter finals came from places as far apart as Edinburgh, Cardiff, Belfast and London.

Lincolnshire primary school headmaster John Tonkin, who organised the tournament, said afterwards: "It was a great success. Technically, the MicroLink system was absolutely spot on.

"MicroLink and Ceefax provided a fitting stage for our junior players to demonstrate why they are second only to the Russian youngsters in the world of chess these days".

Typesetting on the line

ONLINE typesetting is coming into its own as an alternative to traditional methods, and MicroLink is playing its part in this booming growth area of commercial printing.

Many small businesses which require professional-quality printed material but can't afford the cost in time and money of manual typesetting are turning to firms like Wordstream for help.

This Bournemouth-based company, owned by husband and wife team David and Jackie Furlonger, provides a service via electronic mail with a choice of 150 different typefaces.

Wordstream is online 24 hours a day, seven days a week, offering next day results at only a tenth of the cost of traditional typesetting.

Eighteen months after its launch, Wordstream has chalked up its 1,000th customer, and now the firm is going international via MicroLink.

Primary targets are Europe, where MicroLink has many subscribers, and the USA.

Specially developed MicroLink technology will enable the contents of Wordstream's mailbox to be downloaded automatically every 15 minutes of the day or night and transferred directly on to typesetting equipment for processing.

MICROLINK enthusiast Dave Oborne thought he had found himself playing a role in a drama when he logged on to his mailbox late one night.

As he was reading his mail another subscriber broke in with the terse message "Help!".

"I felt echoes of Tony Hancock getting the Mayday emergency call in his famous radio sketch", David said later. "But it proved to be a request for help from someone who wanted to send an urgent Telemessage and wasn't sure how to go about it.

"I was pleased to put him on the right track, but a little disappointed it wasn't as dramatic a situation as I imagined it was going to be".

Messages get a bright new look

FIVE new designs have been created for the colourful Telemessage greetings card series which is available through MicroLink and covers a variety of special events including births, weddings and coming of age.

Among them is a reproduction of Renoir's famous boating scene The Seine at Asnières. It replaces the longest serving Telemessage card – a pastoral scene of butterflies and flowers that has been a favourite since 1981.

Telemessage now has 14 different card designs to meet a wide variety of needs like business announcements, birthdays, anniversaries, get-well-soon messages and condolences.

Only 13 are available to the public, however – the other card is exclusive to The Queen who uses it to send her personal greetings to people celebrating their 100th birthday or diamond weddings.

It costs as little as £2.20 to send a Telemessage greeting card via MicroLink.

TRADE LINK

DESPITE the difficulties caused because some manufacturers refuse to trade with South Africa, micro users in that country have to soldier on regardless.

One of them, computer consultant Steve Crawford, has joined MicroLink in order to improve his links with hardware and software suppliers in Britain.

"When you have the situation where leading firms have cut their ties with South Africa for political reasons it is essential to explore other avenues of supply", he says.

"MicroLink telex and electronic mail services are the most economical and efficient methods of contact between people like myself and UK suppliers.

"Current circumstances would otherwise make it impossible to obtain new or replacement hardware and software which those in favour of the boycott should remember are just as essential to the opponents of apartheid".

YOUR chance to join MicroLink – turn to Page 4

Autoboot your cassette files

More on adding that pro touch to your programs from resident guru LEN GOLDING

LAST month we covered the theory behind cassette autoboots, and explained how to write and save machine code programs which will load and run automatically. This month we look at a program which can convert your Basic programs to an autoboot cassette form.

Conversion is actually a three-stage process. First you load a utility program called Creator. Next you load your Basic program and call the Creator routine with a USR command. This makes an entirely new cassette file which has a short machine code routine inserted ahead of your Basic program.

Loading the resulting file is exactly the same as loading commercial autoboot software. Switch the computer on while holding down the Start key, then hit any key when the single beep sounds. Everything else is automatic, and as soon as loading is complete your Basic program will run.

The system works by inserting a new editor handler and putting two commands (GRAPHICS 0 and RUN) into Basic's text buffer. When Basic gets control it will assume that you have typed the text line in direct mode, so it executes the commands immediately.

Although this is a little more complex than using direct jumps to the Basic rom itself, it ensures that the converted programs will run with all versions of Basic, and thus on any Atari 8 bit computer.

Back to practical matters. Program I makes the Creator file. When run this will make an autoboot machine code cassette – in fact, you might recognise lines 10 to 140 as being identical to last month's Program III. Because the program works with machine code, all DATA statements must be absolutely correct or it will crash.

Watch out for the three most common typing errors – using the letter O instead of zero, typing two commas with no number in between, and typing a comma at the end of a program line. Be sure to save a copy before you try running it.

When you're sure everything is correct, insert a new tape and type RUN. Press Record and Play and then Return after you hear the usual two beeps. Once completed, label the finished cassette as 'Creator', and make a note that it's an autoboot-format file. Once this is safely in your possession, Program I can be filed away as it won't be needed again.

Here are the step-by-step instructions for using Creator to convert an existing Basic program into the new cassette autoboot form.

- Switch power off and insert the Creator cassette.
- Switch power on while holding down the Start key, and hit any key when the beep sounds. After the usual leader delay, you will hear the Creator file loading.
- CLOAD the Basic program which you want turned into an autoboot, but don't run it.
- Insert a blank, fully rewound cassette and type:

X=USR(1816)

- Press Record and Play, and hit Return after the two beeps. Your Basic program will now be written to tape in autoboot format.

Remember that programs in this format cannot be loaded using any of Basic's commands – you must use the autoboot loading procedure. Once in memory, though, your program will behave just as though you had typed CLOAD and RUN.

Now let's leave cassettes for a while and take a look at disc-based programs. There are two different systems available for making disc software load and run automatically – disc autoboot or AUTORUN.SYS. Both will work only with machine code, but AUTORUN.SYS can be used to load and run a Basic program, giving the effect of a Basic autoboot.

Let's take disc autoboots first. Since they look and behave almost exactly like the cassette autoboots which we covered last time, we'll skip through the details fairly quickly.

When power is switched on with a disc drive connected, there must be some autoboot information on the disc, otherwise the screen will fill with BOOT ERROR messages. On a normal Dos disc, this autoboot system loads and initialises the DOS.SYS file, but the process can be used for other things. Program II shows the correct format. Lines 10 to 550 form a new SAVE routine for disc which isn't part of the autoboot data itself.

The first six bytes in the autoboot code (starting at line 640) are a header, containing a boot flag (normally zero), the number of sectors to load, the load address and finally the initialisation address. The OS reads this header, and stores the load address in BOOTAD (578,579), and the initialisation address in DOSINI (12,13).

It then makes a note that it's using a disc-based program by storing a 1 in the BOOT? location (address 9). Once it has this information available it can load all the boot sectors into the correct addresses in memory.

The next thing the OS does is to perform a JSR to BOOTAD+6, skipping over the six bytes of header data to execute the code labelled *COLDST* in our example. This section will only be executed once, immediately after the sectors have been loaded, and must end with CLC, RTS – otherwise you will get the BOOT ERROR message.

The second stage is another JSR, this time to the initialisation address now given by DOSINI, which sends it to our *INIT* code. This section must end with RTS, or the system will lock up. The boot process terminates by handing control to the language or other cartridge, via a JMP to the cartridge start address.

If no cartridge is installed, the final JMP goes to the address stored in DOSVEC (10,11), which normally points to the self-test or memo-pad routine. You can change DOSVEC during the initialisation routine so that the final JMP will go elsewhere, but only experienced machine code programmers are likely to use this facility as it completely bypasses Basic. The second JSR and final JMP are always repeated whenever System Reset is pressed.

Autoboot code is always stored on the disc starting at sector one, but none of the standard commands avail-

→

able in the Assembler Editor cartridge or Dos utility package will create such a format automatically, so we need a special machine code routine. If you have an Assembler you can use the saver routine given as Program II. If not, the Basic version – Program III – will do exactly the same job.

The disc you plan to write to must be formatted but should not contain DOS.SYS. In fact, since the completed disc will not be in normal Dos format, you should not have any files on it or you may lose some of them.

When you call the saver routine, either from the assembler or by running Program III, the code from *START* to *FINISH* will be written automatically to sector one. Turn power off then on again, and the file will load and run automatically, causing the screen border to change colour.

This is no big deal, but once you've got this simple file working correctly there's nothing to stop you inserting much more interesting routines at *COLDST* or *INIT*. Always retain the code that resets MEMLO, since this ensures that your autoboot code can coexist with Basic or any other language cartridge.

Now for the bad news – disc autoboots are a pain to use. They must start on sector 1, so you can have only one per disc. They don't appear on disc directories, you can't LOAD them, SAVE them or LIST them in any of the conventional ways, and they won't even RUN except at power-up time.

Worst of all, you can't use them in conjunction with Dos because only one boot program can be loaded at a time, and DOS.SYS itself needs to boot into memory. So if your software needs to communicate with the disc drive after initial power-up, forget it – Unless, of course, you're prepared to write your own disc management routines.

● *The alternative is to use AUTORUN .SYS, which is a much friendlier system, and better suited to the needs of Basic programmers. We'll tell you all about that next month.*

Program I

```
5 REM PROGRAM 1 - Makes 'Creator' file
 which can convert Basic programs into
 autoboot cassette files.
10 REM Writes the data starting at lin
e 150 into an autoboot cassette file.
20 BFR=(PEEK(106)-24)*256:REM reserve
a safe area at the top of RAM as a tem
porary buffer
30 FOR X=0 TO 46:READ D:POKE 1536+X,D:
NEXT X:REM Load the new SAVE routine i
nto page 6
40 DATA 104,104,133,204,104,133,203,10
4,133,206,104,133,205,162,16,169,11,15
7,66,3
50 DATA 165,203,157,68,3,165,204,157,6
9,3,165,205,157,72,3,165,206,157,73,3
60 DATA 32,86,228,96,67,58,155
70 REM Load the CREATOR code temporari
ly into the reserved buffer space
80 X=0:RESTORE 150
90 READ D:IF D=-1 THEN 120
100 POKE BFR+X,D:X=X+1:GOTO 90
110 REM Now read the data from the tem
porary buffer into an Autoboot cassett
e file
120 OPEN #1,8,128,"C:"
```

```
130 X=USR(1536,BFR,PEEK(BFR+1)*128)
140 END
150 DATA 0,4,0,7,13,7,169,60,141,2,211
,24,96,169,191,141,231,2,169,8
160 DATA 141,232,2,96,104,162,13,181,1
28,157,177,8,202,16,248,165,140,141,15
5,8
170 DATA 56,233,180,141,157,8,165,141,
141,156,8,233,7,141,158,8,10,141,181,7
180 DATA 173,157,8,240,8,16,3,238,181,
7,238,181,7,169,180,141,153,8,169,7
190 DATA 141,154,8,32,93,7,32,127,7,32
,169,7,96,162,16,169,3,141,82,3
200 DATA 169,8,141,90,3,169,128,141,91
,3,169,124,141,84,3,169,7,141,85,3
210 DATA 32,86,228,96,67,58,155,162,16
,169,11,141,82,3,173,153,8,141,84,3
220 DATA 173,154,8,141,85,3,173,155,8,
56,237,153,8,141,88,3,173,156,8,237
230 DATA 154,8,141,89,3,32,86,228,96,1
62,16,169,12,141,82,3,32,86,228,96
240 DATA 0,0,180,7,26,8,169,4,141,197,
2,169,60,141,2,211,162,0,189,26
250 DATA 3,201,69,240,5,232,232,232,20
8,244,232,142,160,8,189,26,3,133,203,2
32
260 DATA 189,26,3,133,204,160,15,177,2
03,153,161,8,136,16,248,169,110,141,16
5,8
270 DATA 169,8,141,166,8,174,160,8,169
,161,157,26,3,232,169,8,157,26,3,169
280 DATA 39,133,205,169,8,133,206,169,
12,141,159,8,169,0,141,151,8,141,152,8
290 DATA 24,96,173,189,8,141,231,2,173
,190,8,141,232,2,96,88,61,85,83,82
300 DATA 40,50,48,57,57,41,155,104,162
,13,189,177,8,149,128,202,16,248,169,9
1
310 DATA 133,2,169,8,133,3,169,102,133
,205,169,8,133,206,169,9,141,159,8,141
320 DATA 152,8,169,0,141,151,8,165,128
,141,231,2,165,129,141,232,2,96,71,82
330 DATA 46,48,58,82,85,78,155,172,151
,8,204,159,8,240,8,177,205,238,151,8
340 DATA 160,1,96,173,152,8,240,18,172
,160,8,165,203,153,26,3,200,165,204,15
3
350 DATA 26,3,169,155,160,1,96,-1
```

Get it right!

LINE	CHSUM	LINE	CHSUM	LINE	CHSUM
5	26687	10	19318	20	21121
30	18348	40	12019	50	10982
60	4362	70	18250	80	2898
90	4317	100	5005	110	21671
120	3015	130	5780	140	836
150	9849	160	11388	170	10948
180	10704	190	10015	200	10403
210	10720	220	10679	230	10463
240	9890	250	11255	260	11395
270	10763	280	11006	290	10482
300	11164	310	10913	320	10797
330	10799	340	11059	350	4656

Program II

```
05 ;PROGRAM 2 - A SIMPLE DISK AUTOBOOT FILE
10 COLOR4 =  $02C8
20 COUNT =   $CB
30 DAUX1 =   $030A
40 DAUX2 =   $030B
50 DBUFHI =  $0305
60 DBUFLO =  $0304
70 DCOMND =  $0302
80 DSKINV =  $E453
90 DUNIT =   $0301
0100 EOL =   $9B
0110 MEMLO = $02E7
0120 START = $0700
0130 ;
0140 ;Start by putting the new SAVE
      routine out of the way on page
       6. This section
0150 ;is needed only if you want to
      make the autoboot file using
      Assembler -
0160 ;Call by: G600. The BASIC version
      (Program 6) contains a different
      SAVER routine.
0170 ;
0180      *=  $0600
0190 ;
0200 SAVER
0210      LDA HEADER+1 Set up the resident
0220      STA COUNT    handler (not CIO)
0230      LDA #1       to save a block of
0240      STA DUNIT    code directly to
0250      LDA #'W      disk sector 1.
0260      STA DCOMND
0270      LDA #START&255
0280      STA DBUFLO
0290      LDA #START/256
0300      STA DBUFHI
0310      LDA #1
0320      STA DAUX1
0330      LDA #0
0340      STA DAUX2
0350 ;
0360 WRITE1
0370      JSR DSKINV   Save to disk all
                       the
0380      BMI DERR     code from START
                       to FINISH
0390      LDA DBUFLO
0400      CLC
0410      ADC #128     (Sector size)
0420      STA DBUFLO
0430      LDA DBUFHI
0440      ADC #0
0450      STA DBUFHI
0460      INC DAUX1
0470      BNE NEXT1
0480      INC DAUX2
0490 ;
0500 NEXT1
0510      DEC COUNT
0520      BNE WRITE1
0530 ;
0540 DERR
0550      BRK
0560 ;
0570 ;The code to be made into an
      autoboot disk file starts here.
      Note that
0580 ;the load address can be within
      the area normally reserved
      for DOS,
0590 ;since DOS cannot be used in
      conjunction with disk autoboot
      files.
0600 ;
0610      *=  START
0620 ;
0630 HEADER
0640      .BYTE 0      Not used
0650      .BYTE FINISH-START+127/128
                       Number of records
0660      .WORD START  Load address
0670      .WORD INIT   Initialisation
                       address
0680 ;
0690 COLDST
0700      CLC
0710      RTS
0720 ;
0730 INIT
0740      LDA #148         Set border colour
0750      STA COLOR4
0760      LDA #FINISH&255  Set MEMLO to
                           protect
0770      STA MEMLO        the autoboot
                           file from
0780      LDA #FINISH/256  destruction
                           by Basic
0790      STA MEMLO+1
0800      RTS
0810 ;
0820 FINISH = *
```

Program III

```
5 REM PROGRAM 3 - BASIC VERSION OF PRO
GRAM 2
10 REM Makes an autoboot disk file fro
m the data starting at line 140
20 FOR X=0 TO 83:READ D:POKE 1536+X,D:
NEXT X:REM put SAVER routine into page
 6
30 DATA 104,104,133,204,104,133,203,10
4,133,206,104,133,205,165,205,141,84,6
,169,1
40 DATA 141,1,3,169,87,141,2,3,165,203
,141,4,3,165,204,141,5,3,169,1
50 DATA 141,10,3,169,0,141,11,3,32,83,
228,48,30,173,4,3,24,105,128,141
60 DATA 4,3,173,5,3,105,0,141,5,3,238,
10,3,208,3,238,11,3,206,84
70 DATA 6,208,221,96,0
80 BFR=(PEEK(106)-24)*256:REM Reserve
6K at the top of RAM, for a buffer are
a
90 COUNT=0:RESTORE 140
100 READ D:IF D=-1 THEN 120
110 POKE BFR+COUNT,D:COUNT=COUNT+1:GOT
O 100:REM Copy the file into BFR
120 SIZE=INT((COUNT+127)/128):REM numb
er of sectors to save
130 X=USR(1536,BFR,SIZE):REM copy the
data from BFR into an autoboot disk fi
le
140 DATA 0,1,0,7,8,7,24,96,169,148,141
,200,2,169,24,141,231,2,169,7
150 DATA 141,232,2,96,-1
```

Get it right!

LINE	CHSUM	LINE	CHSUM	LINE	CHSUM
5	8197	10	17650	20	16335
30	11972	40	9847	50	10058
60	9202	70	3211	80	17256
90	4066	100	4317	110	14237
120	13298	130	18955	140	9616
150	3224				

PART two of the Advanced Character Editor (ACE) provides a set of subroutines to be added to the main program which appeared last month. Please note that part two will not work on its own.

When typing in Program I, make sure to use the line numbers exactly as printed, and include all the REM lines.

Before merging and running the combined program it is a good idea to list part two to tape using the LIST "C:" command, or to disc with LIST "D:ACE2".

With part two loaded into memory, enter part one from last month's *Atari User* by using the command ENTER "C:" or, for disc users, ENTER "D:ACE1". You will then have merged parts one and two which can then be saved to tape using LIST "C:" again or LIST "D:ACE1AND2". The third and final section of ACE will be published next month.

DATA sets for your own programs

Part 2 of STEPHEN WILLIAMSON'S series on creating your own custom-built character set

Part two adds the extra commands COLOUR, DATA, LOAD and SAVE.

COLOUR – C

Addresses 708 to 712 are the colour registers that affect the text graphic modes.

The joystick allows you to alter the current colour. Left and right change the shade, while Up increases the brightness and Down decreases it.

To change colour registers press the fire button. The colour registers act differently in Graphics 0 compared with Graphics 1 and 2 as shown in Figure I below.

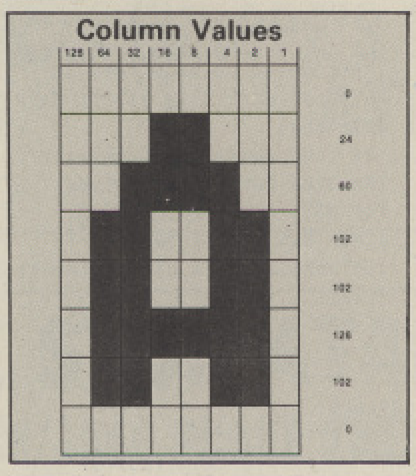
The menu display shows the value of the colour chosen. To recreate this colour in your own programs POKE the appropriate colour register with the value for example **POKE 708,8** will make the uppercase and number characters in Graphics 1 or 2 come out grey. To exit from Colour press the Esc key.

DATA – D

The eight numbers displayed when you enter the Data option are the bit-mapped numbers used to define the current character shape in memory.

A character consists of 64 pixels plotted within an 8 x 8 grid. For each row a single number can be used to represent the pattern of pixels. To do this, a pixel plotted within the row is given a value that depends on which column it is in. A pixel in the first column is given a value of 128, the second column 64, the third 32 and so on.

The values of all the pixels in the row are added up to give a single number from 0 (no pixels on a row) to 255 (8 pixels in a row). This can be seen from Table II which depicts how the letter A is bit-mapped:



SAVE – S

A SAVE menu appears on the right hand side of the main display. After an option has been chosen the device to which the data is saved must be specified. All disc filenames must be a maximum of eight letters long with no extenders. The character option will add the extender .CHR to the saved file and the Screen option will add .SCR. No extender is added for the Basic Subroutine. Cassette users must press Record and Play then press Return when prompted.

BASIC SUBROUTINE – B

This option will save to tape, disc or list to printer the subroutines (up to a maximum of six) that were written during the DATA section of ACE. An example of the sort of file that is created is given as Program IV.

CHARACTER – C

This saves the whole redefined character set to cassette or disc.

SCREEN – S

The Screen option saves PAD screens. The PAD option is included in ACE part three which will appear in next month's *Atari User*. Until part three is merged with parts one and two then this option is unavailable.

LOAD – L

Previously saved ACE character sets and PAD screen data can be loaded.

CHARACTER – C

This loads a character set. Any set loaded will overwrite the current character set display. Disc users must specify the file name (without extender) and cassette users must, after inserting the appropiate character set tape, press Play when prompted.

SCREEN – S

This option loads PAD screens and will be discussed next month when the PAD and animation modules are added to ACE.

	Register	Basic Equivalent
GRAPHICS 0		
Character Brightness	709	SETCOLOR 1
Background	710	SETCOLOR 2
Border	712	SETCOLOR 4
GRAPHICS 1 AND 2		
Uppercase and numbers	708	SETCOLOR 0
Lowercase characters	709	SETCOLOR 1
Inverse uppercase	710	SETCOLOR 2
Inverse lowercase	711	SETCOLOR 3
Background and Border	712	SETCOLOR 4

Figure I

USING ACE CHARACTERS IN YOUR OWN PROGRAMS

The Basic subroutine that ACE saves is in listed form on lines 30000 to 30500 – so for obvious reasons you

should avoid using these program lines yourself.

ACE saves the subroutines as a listed file. With your own program in ram add the subroutines to the end of your program with the ENTER "C:" command for cassette users or ENTER "D:FILENAME" from disc.

Access the routine by using GOSUB 30000. In most cases this is best at the beginning of the program during initialisation routines.

The ACE Character Set Routine program listing is an example routine written by ACE which redefines six characters. The program stores the new character set at the top of ram. To do this RAMTOP – the pointer to the top of the Basic free memory – is lowered. RAMTOP can be found by examining the value held at address 106 (normally 160 on 800 XL's and XE's). This is value is expressed as pages of 256 bytes. This means that RAMTOP is normally address 40960 (160 multiplied by 256).

Line 30030 of the subroutine lowers RAMTOP by five pages and then calculates CHBASE (the address for the character set data is to be loaded into). This is set to page 156 (address 39936) – see lines 30030 and 30040.

The GRAPHICS 0 command in line 30050 reallocates the screen memory area to avoid conflict with the character data. If you wish to use the routine in Graphics 1 or 2 then line 30050 must be changed. To calculate the starting address of the new screen area use the formula:

SCREENT=PEEK(88)+PEEK(89)*256

A short machine code routine copies the standard character set from rom to ram and then the redefined character set is loaded into the appropriate area of the character data.

Address 756 points the operating system to the start of the character set data. Normally a value of 224 is held here to indicate the standard rom character set at address 57344 (224 times 256).

If you want to change the address of the character set, CHBASE should be set to a four page boundary below RAMTOP that is, RAMTOP-4, RAMTOP-8, RAMTOP-12 and so on.

To place the character data 12 pages below RAMTOP, and leave the screen data area at its normal place in memory (at the top of ram) change line 30020 to read:

30020 M=PEEK(106)-12

and delete line 30030. The character set will then be loaded at page 148 (address 37888) and finish at address 38911 – a full character set takes up 1k of memory.

Don't forget to POKE the value 148 into address 756 to turn on the redefined character set.

Each time you use a GRAPHICS command in a program the value in location 756 will be reset and you will have to POKE it back in again. This also applies to pressing System Reset.

ACE CHARACTER SET LOADER

The ACE Character Set Loader – Program II – is a subroutine for use with your own programs. If you are using cassette then you should delete line 20010 and remove the REM command on line 20000.

The filename for the character set as listed is "D:SET1.CHR". Line 20010 may be altered should you want to load an ACE character set with a different filename. All ACE file names are saved using the extender .CHR.

The subroutine can be listed to tape using LIST"C:" or LIST "D:FILENAME" and later merged with your own program using the ENTER command.

This routine sets CHBASE to address 37888 (page 148 – or 12 pages below RAMTOP). To assign another area simply change the MEM address in line 20020 to another four page boundary below RAMTOP. For example, to make CHBASE page 144 (address 36864), change line 20020 to:

MEM=PEEK(106)–16:
CHBASE=MEM*256

To access the routine in your own program use the command GOSUB 20000

Cassette users will find it convenient to record the character data immediately following the main program. When the character set loader is run, make sure that the Play button is pressed and hit Return after the beep.

ACE MACHINE CODE LOADER

The ACE Machine Code Character loader – Program III – is an assembly language routine for loading ACE character sets from machine code. The listed source code can be typed in with the Atari Assembler Editor Cartridge, MAC 65 or any other similar assembler program.

To load a file other than "D:SET 1.CHR" then line 420 must be changed, but make sure to keep the .CHR extender.

To change the character set data area alter the CHBASE label.

The listing is for Disc users only but can be adapted to cassette (see Andre Willey's articles on accessing CIO from Machine Code – *Atari User* from January 1987).

Program I: ACE Editor – Part two

```
870 IF KEY=58 THEN GOSUB 1030:GOSUB 22
40:KEY=255
880 IF KEY=18 THEN GOSUB 1030:GOSUB 25
90:KEY=255
960 IF KEY=62 THEN GOSUB 1030:GOSUB 40
60:KEY=255
970 IF KEY=0 THEN GOSUB 1030:GOSUB 464
0:KEY=255
2235 REM ACE PART 2
2240 REM DATA
2250 GOSUB 2960
2260 POSITION 2,2:? "DATA"
2270 DAT=CHBASE+(CH*8)
2280 POSITION 27,7:? PEEK(DAT);",";PEE
K(DAT+1);",";PEEK(DAT+2)
2290 POSITION 27,8:? PEEK(DAT+3);",";P
EEK(DAT+4);",";PEEK(DAT+5)
2300 POSITION 27,9:? PEEK(DAT+6);",";P
EEK(DAT+7)
2310 POKE 764,255
2320 POSITION 27,10:? "WRITE (Y/N)?"
2330 GET #1,KEY
2340 GOSUB 2550
2350 IF KEY=89 THEN GOSUB 1030:GOSUB 2
370:RETURN
2360 GOSUB 1030:RETURN
2370 REM WRITE SUB-ROUTINE
2380 IF LN>30280 THEN GOSUB 2540:POSIT
ION 27,7:? CHR$(253);"MEMORY FULL":FOR
 D=1 TO 40:NEXT D:RETURN
2390 ? CHR$(125):POSITION 0,2
2400 CHDAT=CHBASE+(CH*8)
2410 ? LN;" FORI=0 TO 7:READD":LN=LN+1
0
2420 ? LN;" POKE CHBASE+(";CH;"*8)+I,D
";":NEXT I":LN=LN+10
2430 ? LN;" DATA ";
2440 FOR I=0 TO 6
2450 ? ;PEEK(CHDAT+I);",";:NEXT I
2460 ? PEEK(CHDAT+7)
2470 LN=LN+10
2480 ? "GOTO2500"
2490 POSITION 0,0:POKE 842,13:END
2500 POKE 842,12
2510 OPEN #1,4,0,"K:"
2520 ? CHR$(125):POKE SM+238,CH:GOSUB
3120:GOSUB 1630:GOSUB 1220
2530 RETURN
2540 REM ERASE RIGHT HAND
2550 FOR I=4 TO 10
2560 POSITION 26,I:? SP$;:POSITION 38,
I:? " ";
2570 NEXT I
2580 RETURN
2590 REM COLOUR
2600 GOSUB 2960
2610 POSITION 2,1:? "COLOUR"
2620 POKE 764,255:KEY=255
2630 REG=708
2640 IF REG=708 THEN PO=1567
2650 IF REG=709 THEN PO=1572
2660 IF REG=710 THEN PO=1577
2670 IF REG=711 THEN PO=1582
```

```
2680 IF REG=712 THEN PO=1587
2690 C=INT(PEEK(PO)/16)
2700 BR=PEEK(PO)-(C*16)
2710 POSITION 28,7:? "REG.    ";CHR$(3
0);CHR$(30);CHR$(30);REG
2720 POSITION 28,8:? "NO.    ";CHR$(30)
;CHR$(30);CHR$(30);PEEK(PO)
2730 IF STICK(0)<>15 THEN FOR D=1 TO 5
:NEXT D
2740 IF STICK(0)=11 THEN C=C-1:IF C=-1
 THEN C=0
2750 IF STICK(0)=7 THEN C=C+1:IF C=16
THEN C=15
2760 IF STICK(0)=14 THEN BR=BR+2:IF BR
>14 THEN BR=14
2770 IF STICK(0)=13 THEN BR=BR-2:IF BR
<0 THEN BR=0
2780 POKE PO,BR+C*16
2790 IF STRIG(0)=0 THEN REG=REG+1:GOSU
B 1030:IF REG=713 THEN REG=708
2800 IF STICK(0)=15 AND PEEK(764)=255
AND STRIG(0)=0 THEN 2710
2810 IF PEEK(764)=255 THEN 2640
2820 IF PEEK(764)=28 THEN GOSUB 1030:G
OSUB 2550:POKE 764,255:RETURN
2830 ? CHR$(253):POKE 764,255
2840 GOTO 2690
2850 REM RESTORE
2860 ATBASE=57344
2870 GOSUB 2960
2880 POSITION 2,9:? "RESTORE"
2890 FOR I=0 TO 7
2900 POKE CHBASE+(CH*8)+I,PEEK(ATBASE+
(CH*8)+I)
2910 NEXT I
2920 GOSUB 1820
2930 GOSUB 1180
2940 GOSUB 2960
2950 RETURN
4060 REM SAVE
4070 GOSUB 2960:POSITION 2,10:? "SAVE"
4080 POSITION 27,8:? "CHARACTER"
4090 POSITION 27,7:? "BASIC SUB.":POKE
 764,255
4100 POSITION 27,9:? "SCREENS"
4110 GET #1,KEY
4120 IF KEY=27 THEN GOSUB 1030:RETURN
4130 IF KEY<>67 AND KEY<>66 AND KEY<>8
3 THEN ? CHR$(253):GOTO 4110
4140 IF KEY=67 THEN GOSUB 1030:GOSUB 5
040:GOSUB 4200:RETURN
4150 IF KEY=66 THEN GOSUB 1030:GOSUB 5
040:GOSUB 4270:RETURN
4160 IF KEY=83 THEN GOSUB 1030:GOSUB 4
350:RETURN
4170 REM
4180 RETURN
4190 IF KEY<>58 AND KEY<>18 THEN 4340
4200 REM SAVE CHARACTER SET
4210 CLOSE #1:Q=LEN(FILE$):FILE$(Q+1,Q
+4)=".CHR"
4220 IF KEY=68 THEN OPEN #1,8,0,FILE$
4230 IF KEY=67 THEN OPEN #1,8,0,"C:"
4240 START=CHBASE:FINISH=CHBASE+1023:G
OSUB 4540
4250 POKE 209,1:FILE$="D:"
4260 CLOSE #1:OPEN #1,4,0,"K:":RETURN
4270 REM SAVE BASIC SUBROUTINE
4280 REM
4290 Q=LEN(FILE$):FILE$(Q+1,Q+1)=".SUB
"
4300 IF KEY=68 THEN LIST FILE$,30000,3
0500
4310 IF KEY=67 THEN LIST "C:",30000,30
500:SOUND 0,0,0,0
4320 IF KEY=80 THEN LIST "P:",30000,30
500
4330 POKE 209,1:FILE$="D:"
4340 GOSUB 2550:RETURN
4350 REM SAVE SCREEN DATA
4360 GOSUB 5040:Q=LEN(FILE$):FILE$(Q+1
,Q+4)=".SCR"
4370 GOSUB 2550:POSITION 27,9:? "NO. T
O SAVE"
4380 GET #1,K
4390 IF K=27 THEN GOSUB 1030:RETURN
4400 IF K<49 OR K>57 THEN ? CHR$(254):
GOTO 4380
4410 GOSUB 1030:N=K-48
4420 IF N=27 THEN GOSUB 1030:RETURN
4430 IF N<48 AND N>57 THEN ? CHR$(254)
:GOTO 4380
4440 START=SM(1):FINISH=SM(N)+319
4450 GOSUB 4460:GOSUB 2550:POKE 209,1:
FILE$="D:":RETURN
4460 REM MEMORY SAVE
4470 CLOSE #1
4480 IF KEY=67 THEN OPEN #1,8,0,"C:"
4490 IF KEY=68 THEN OPEN #1,8,0,FILE$
4500 POKE START-6,N:POKE START-5,PEEK(
1567)
4510 POKE START-4,PEEK(1572):POKE STAR
T-3,PEEK(1577)
4520 POKE START-2,PEEK(1582):POKE STAR
T-1,PEEK(1587)
4530 START=START-6
4540 HISTART=INT(START/256):LOSTART=ST
ART-HISTART*256
4550 LENGTH=FINISH-START:HILENGTH=INT(
LENGTH/256)
4560 LOLENGTH=LENGTH-HILENGTH*256
4570 POKE 849,1:POKE 850,11
4580 POKE 852,LOSTART:POKE 853,HISTART
4590 POKE 856,LOLENGTH:POKE 857,HILENG
TH
4600 POKE 858,8:IF KEY=67 THEN POKE 85
9,128:POKE 62,128
4610 A=USR(ADR(IN$))
4620 CLOSE #1:OPEN #1,4,0,"K:":POKE 20
9,1
4630 SOUND 0,0,0,0:RETURN
4640 REM LOAD
4650 TRAP 5000:GOSUB 2960
4660 POSITION 2,6:? "LOAD":P=0
4670 GOSUB 2550:POSITION 27,8:? "CHARA
CTER"
4680 POSITION 27,9:? "SCREEN"
4690 GET #1,KEY:POKE 209,1
4700 IF KEY=27 THEN GOSUB 1030:RETURN
4710 IF KEY<>67 AND KEY<>83 THEN ? CHR
$(253):GOTO 4690
4720 GOSUB 1030
4730 IF KEY=67 THEN GOSUB 4850
4740 IF KEY=18 THEN GOSUB 4085
4750 IF KEY=83 THEN GOSUB 4770
4760 POKE 209,1:SOUND 0,0,0,0:RETURN
4770 REM LOAD SCREEN DATA
4780 GOSUB 5040:Q=LEN(FILE$):FILE$(Q+1
,Q+4)=".SCR"
4790 CLOSE #1:IF KEY=68 THEN OPEN #1,4
,0,FILE$
4800 IF KEY=67 THEN OPEN #1,4,0,"C:":P
OKE 859,128:POKE 62,128
4810 MEM=SM(1)-6:GOSUB 4890
4820 POKE 1567,PEEK(MEM+1):POKE 1572,P
EEK(MEM+2):POKE 1577,PEEK(MEM+3):POKE
1582,PEEK(MEM+4)
4830 POKE 1587,PEEK(MEM+5):RETURN
4840 REM LOAD CHARACTER DATA
```

Get it right!

LINE	CHSUM	LINE	CHSUM	LINE	CHSUM
870	8463	880	8467	960	8437
970	8044	2235	2664	2240	1581
2250	1994	2260	5681	2270	3268
2280	10482	2290	10818	2300	7971
2310	2121	2320	10175	2330	1876
2340	1973	2350	8650	2360	3609
2370	4376	2380	17764	2390	4506
2400	3580	2410	6276	2420	9460
2430	2509	2440	2089	2450	5086
2460	2824	2470	1545	2480	1940
2490	5418	2500	1943	2510	2690
2520	10754	2530	1498	2540	4117
2550	2278	2560	7696	2570	1345
2580	1498	2590	2147	2600	1994
2610	6829	2620	3676	2630	1311
2640	4325	2650	4309	2660	4325
2670	4309	2680	4330	2690	3443
2700	3303	2710	9760	2720	10443
2730	7336	2740	7284	2750	7240
2760	8837	2770	8589	2780	2845
2790	11602	2800	9822	2810	4448
2820	11478	2830	4209	2840	1904
2850	2291	2860	2205	2870	1994
2880	7708	2890	2092	2900	7519
2910	1345	2920	1967	2930	1969
2940	1994	2950	1498	4060	1618
4070	7766	4080	5687	4090	7754
4100	5471	4110	1876	4120	6487
4130	11086	4140	10673	4150	10682
4160	8626	4170	871	4180	1498
4190	5850	4200	4240	4210	7906
4220	5939	4230	5564	4240	8236
4250	3771	4260	5991	4270	5229

LINE	CHSUM	LINE	CHSUM	LINE	CHSUM
4280	871	4290	6162	4300	6816
4310	8810	4320	6376	4330	3771
4340	3642	4350	3953	4360	8232
4370	7904	4380	1442	4390	5760
4400	7231	4410	3226	4420	5775
4430	7349	4440	5493	4450	9494
4460	3204	4470	1559	4480	5564
4490	5939	4500	7552	4510	8829
4520	8822	4530	2837	4540	10202
4550	9311	4560	5988	4570	3960
4580	6736	4590	7044	4600	9014
4610	2949	4620	6271	4630	3975
4640	1572	4650	3840	4660	6528
4670	8017	4680	5192	4690	3825
4700	6487	4710	9141	4720	1940
4730	4885	4740	4858	4750	4879
4760	5895	4770	3907	4780	8232
4790	7237	4800	9976	4810	3923
4820	15974	4830	5802	4840	4431
4850	9922	4860	5919	4870	9976
4880	2159	4890	2098	4900	3974
4910	4236	4920	5018	4930	3062
4940	4417	4950	1873	4960	2949
4970	4322	4980	5778	4990	3642
5000	4837	5010	19893	5020	16676
5030	10903	5040	2873	5050	4309
5060	5334	5070	5554	5080	8436
5090	1365	5100	1876	5110	7591
5120	7505	5130	11084	5140	4870
5150	1498	5160	3389	5170	7247
5180	5142	5190	17010	5200	6752
5210	1498				

```
4850 GOSUB 5040:Q=LEN(FILE$):FILE$(Q+1
,Q+4)=".CHR":CLOSE #1
4860 IF KEY=68 THEN OPEN #1,4,0,FILE$
4870 IF KEY=67 THEN OPEN #1,4,0,"C:":P
OKE 859,128:POKE 62,128
4880 MEM=CHBASE
4890 REM IO LOAD
4900 HIBYTE=INT(MEM/256)
4910 LOBYTE=MEM-HIBYTE*256
4920 POKE 850,7:POKE 852,LOBYTE
4930 POKE 853,HIBYTE
4940 POKE 856,255:POKE 857,255
4950 POKE 858,4
4960 A=USR(ADR(IN$))
4970 CLOSE #1:OPEN #1,4,0,"K:"
4980 GOSUB 1830:GOSUB 1220:FILE$="D:"
4990 GOSUB 2550:RETURN
5000 REM FILE NOT FOUND ERROR
5010 GOSUB 2540:POSITION 27,7:? CHR$(2
53);"ERROR NO.";PEEK(195):IF PEEK(195)
=138 THEN POSITION 27,8:? "NO DEVICE"
5020 IF PEEK(195)=170 THEN POSITION 27
,8:? CHR$(253);"FILE NOT":POSITION 27,
9:? "FOUND":FILE$="D:"
5030 FOR DEL=1 TO 100:NEXT DEL:CLOSE #
1:OPEN #1,4,0,"K:":RETURN
5040 REM GET DEVICE
5050 GOSUB 2550:POKE 764,255
5060 POSITION 27,7:? "DISK OR"
5070 POSITION 27,8:? "CASSETTE"
5080 IF KEY=66 THEN POSITION 27,9:? "P
RINTER"
5090 KEY=255
5100 GET #1,KEY
5110 IF KEY=27 THEN GOSUB 1030:POP :RE
TURN
5120 IF KEY=80 AND P=1 THEN GOSUB 1030
:RETURN
5130 IF KEY<>67 AND KEY<>68 AND KEY<>8
0 THEN ? CHR$(253):GOTO 5090
5140 IF KEY=68 THEN GOSUB 5160
5150 RETURN
5160 REM DISK FILE NAME
5170 GOSUB 2540:POSITION 27,7:? "FILE
NAME"
5180 POSITION 26,10:INPUT NAME$
5190 IF LEN(NAME$)>8 THEN POSITION 26,
8:? "8 CHAR. MAX.":NAME$="":POSITION 2
6,10:? SP$:GOTO 5180
5200 GOSUB 1030:FILE$(LEN(FILE$)+1)=NA
ME$
5210 RETURN
```

Program II: ACE Character Set Loader

```
19998 REM  ACE CHARACTER SET LOADER
19999 REM  by Stephen Williamson
20000 DIM IN$(8):FOR L=1 TO 7:READ A:I
N$(L,L)=CHR$(A):NEXT L
20005 REM OPEN=1,4,0,"C:":POKE859,128:
POKE62,128:REM *** CASSETTE USERS REMO
VE FIRST REM ***
20010 OPEN #1,4,0,"D:SET1.CHR":REM ***
 CASSETTE USERS DELETE LINE 20010
20020 MEM=PEEK(106)-12:CHBASE=MEM*256
20030 HIBYTE=INT(CHBASE/256)
20040 LOBYTE=CHBASE-HIBYTE*256
20050 POKE 850,7:POKE 852,LOBYTE
20060 POKE 853,HIBYTE
20070 POKE 856,255:POKE 857,255
20080 POKE 858,4
20090 A=USR(ADR(IN$))
20100 CLOSE #1
20110 POKE 756,HIBYTE
20120 DATA 104,162,16,76,86,228,96
20130 RETURN
```

Get it right!

LINE	CHSUM	LINE	CHSUM	LINE	CHSUM
19998	15499	19999	17070	20000	9707
20005	15744	20010	12176	20020	5629
20030	4334	20040	5086	20050	5018
20060	3062	20070	4417	20080	1873
20090	2949	20100	1559	20110	3072
20120	4474	20130	1498		

Program III: ACE Machine Code Character Loader

```
10 ;ACE MACHINE CODE CHARACTER LOADER
20 ; BY STEPHEN WILLIAMSON.
30   *=1536
40 COMMAND=834
50 BUFFER=836
60 BUFLEN=840
70 AUX1=842
80 AUX2=843
90 CHBASE=37888
0100 CIO=58454
0110  PLA
0120  LDX #16
0130  LDA #12 CLOSE DEVICE #1
0140  STA COMMAND,X
0150  JSR CIO
0160  LDX #16
0170  LDA #3 OPEN DEVICE #1
0180  STA COMMAND,X
0190  LDA #4 SET AUX1 TO DISK READ
0200  STA AUX1,X
0210  LDA #0 SET ZERO VALUE FOR AUX2
0220  STA AUX2,X
0230  LDA #NAME&255 PUTADDRESS OF
FILENAME IN BUFFER
0240  STA BUFFER,X
0250  LDA #NAME/256
0260  STA BUFFER+1,X
0270  JSR CIO GO TO CIO TO OPEN D:
FILENAME
0280  LDX #16
0290  LDA #CHBASE&255 LOW BYTE OF
FILENAME ADDRESS
0300  STA BUFFER,X
0310  LDA #CHBASE/256 HIGH BYTE OF
FILENAME ADDRESS
0320  STA BUFFER+1,X
0330  LDA #255 SET MAXIMUM RECORD LENGTH
0340  STA BUFLEN,X
0350  STA BUFLEN+1,X
0360  LDA #7 SET COMMAND TO GET BINARY
RECORD
0370  STA COMMAND,X
0380  JSR CIO
0390  LDA #CHBASE/256 HIGH BYTE OF
CHBASE
0400  STA 756 STORE HIGH BYTE IN CHBAS
TO SWITCH ON ACE CHARACTER SET
0410  RTS
0420 NAME .BYTE"D:SET1.CHR" FILENAME OF
ACE CHARACTER SET. CHANGE TO LOAD
DIFFERENT FILENAME
0430  .END
```

ACE Character Set Routine

```
30000 REM ACE CHARACTER SET ROUTINE
30005 REM by Stephen Williamson
30010 DIM ML$(40)
30020 M=PEEK(106)-4
30030 POKE 106,M-1
30040 CHBASE=256*(M)
30050 GRAPHICS 0:SETCOLOR 2,0,4
30060 RESTORE 30090:FOR L=1 TO 36:READ
 A
30070 ML$(L,L)=CH
30000 REM ACE CHARACTER SET ROUTINE
30005 REM by Stephen Williamson
30010 DIM ML$(40)
30020 M=PEEK(106)-4
30030 POKE 106,M-1
30040 CHBASE=256*(M)
30050 GRAPHICS 0:SETCOLOR 2,0,4
30060 RESTORE 30090:FOR L=1 TO 36:READ
 A
30070 ML$(L,L)=CHR$(A):NEXT L
30080 A=USR(ADR(ML$),M):POKE 756,M
30090 DATA 104,104,104,133,204,169,224
,133,206,162,0,160,0,177,205,145,203,2
00,208,249
30100 DATA 164,204,200,132,204,164,206
,200,132,206,232,224,5,208,232,96
30110 FOR I=0 TO 7:READ D
30120 POKE CHBASE+(33*8)+I,D:NEXT I
30130 DATA 219,255,189,0,24,0,0,0
30140 FOR I=0 TO 7:READ D
30150 POKE CHBASE+(42*8)+I,D:NEXT I
30160 DATA 16,0,56,84,84,56,0,16
30170 FOR I=0 TO 7:READ D
30180 POKE CHBASE+(45*8)+I,D:NEXT I
30190 DATA 224,224,224,224,207,191,127
,0
30200 FOR I=0 TO 7:READ D
30210 POKE CHBASE+(45*8)+I,D:NEXT I
30220 DATA 224,224,224,224,207,191,127
,0
30230 FOR I=0 TO 7:READ D
30240 POKE CHBASE+(51*8)+I,D:NEXT I
30250 DATA 0,0,0,24,0,189,255,219
30260 FOR I=0 TO 7:READ D
30270 POKE CHBASE+(56*8)+I,D:NEXT I
30280 DATA 255,255,255,255,255,255,255
,255
30500 RETURN
```

Get it right!

LINE	CHSUM	LINE	CHSUM	LINE	CHSUM
30000	16059	30005	17582	30010	1742
30020	2288	30030	2098	30040	2611
30050	5007	30060	6547	30070	4054
30080	5303	30090	12057	30100	9895
30110	3605	30120	5469	30130	4179
30140	3605	30150	5473	30160	4098
30170	3605	30180	5476	30190	5418
30200	3605	30210	5476	30220	5418
30230	3605	30240	5477	30250	4256
30260	3605	30270	5482	30280	5647
30500	1498				

It's our biggest competition ever

Treasure Hu

YES, *Atari User* is two years old this month, and what an exciting life it has had. We've seen – and helped to stimulate – a tremendous growth in the number of Atari users. There's been the headline-creating launch of the ST, with more powerful versions appearing every few months. Initially we devoted just a section of the magazine to this computer – now it's a separate magazine in its own right.

So there's lots to celebrate this birthday. And to help us push the boat out is *Atari* and some of Britain's leading software houses. Together we've come up with the biggest competition ever, with a massive number of prizes – 385 of them, worth a total of £3,278!

The prizes

TOP of the list is *Atari,* the company that started it all, offering a complete 130XE system, with data recorder and joystick, as well as two DCS 2600 video games consoles.

But most of the prizes come from the many software houses which continue to support the Atari computer with top-class games. *Red Rat,* a fast-developing software house from Manchester, is offering 100 copies of the new game Space Lobsters, reviewed this issue.

Also from Manchester is *English Software,* giving away 30 copies of its compilation Smash Hits 7. From *US Gold* is the top-class conversion of the arcade smash, Gauntlet, with 20 copies up for grabs. And *Database Software* is giving 10 copies of the just-released Mini Office II.

On the budget side there's 15 copies each of five games from *Argus:* Cloak of Death, Savage Pond, Up Up and Away, Quest for Eternity and Leaper.

Mastertronic, without a doubt the biggest budget house, has offered six copies of each of its releases for the Atari: Action Biker, One Man and His Droid, Vegas Jackpot, Kickstart, Crystal Raider, Masterchess, Molecule Man, Gun Law, Despatch Rider, Vegas Jackpot, Swat and Ninja. And winging all the way from Firebird are 10 copies of Warhawk.

From the masters of the simulation, *Microprose,* come five copies of six of its releases: F-15 Strike Eagle, Silent Service, Solo Flight, Kennedy Approach, Crusade in Europe and Decision in the Desert.

For the adventure fanatic there's five copies of The Pawn, Jewels of Darkness and Silicon Dreams from *Rainbird.*

And for the more sedate games player, *CDS* is donating 10 copies each of Colossus Chess 4.0 and Steve Davies Snooker.

What you have to do

Dotted around this issue you will find various items of treasure. Your task is to count up how many gold bars, sovereigns and jewels there are and jot the numbers down on the entry coupon.

Then tell us the name of your favourite game and, in not more than 25 words, why you like it so much.

With 385 prizes, you stand a good chance of winning something, so sharpen that pencil and go hunting for treasures, me hearties!

Gold bars ....
Sovereigns ....
Jewels....................

My favourite game is: ____________________

I keep going back to it because (in not more than 25 words): ____________________

Name ____________________ Age ______

Address ____________________

Postcode ____________________

Send to: Second Birthday Competition, Atari User, 68 Chester Road, Hazel Grove, Stockport SK7 5NY.



ever

Hunt !

★ **385 prizes**

★ **And they're worth £3,278**



Analogue avenue to producing freehand drawings

Part II of LEN GOLDING's series on using your Atari to control devices

THIS month's simple gadget makes it easy to produce freehand drawings on screen. Children will have hours of fun with it, and it has been known to occupy adults for the odd evening or two.

It's very easy to build and program, needs no knowledge of electronics and can be built in a few hours by any DIY enthusiast. In fact, it's an ideal first project for youngsters who are starting to study the ins and outs of computers at secondary school.

It looks rather like an upside-down joystick, but it works by generating analogue rather than digital signals.

Why is that an advantage? Well, a standard digital joystick can produce only nine separate codes, which your software has to interpret as directional commands – up, down and so on.

Because movement is limited to only eight directions, it's very difficult to draw diagonal lines except at 45 degrees, and almost impossible to produce curves.

Also factors like speed and distance have to be programmed separately – speed by using some kind of timing loop and distance by moving one step at a time for as long as the stick is held in one position.

Analogue joysticks work on an entirely different principle. They generate numbers which correspond to the current vertical and horizontal position of the stick itself.

In the Atari's case these numbers can vary from 1 to 228, so it's possible to convert them into actual screen coordinates for any mode up to Graphics 7. This means that you can plot a coloured pixel at any position you choose, and it gives you fingertip control over speed, distance and direction.

The mechanics are quite complex – two potentiometers mounted at right angles on a double axis – but fortunately they can be bought ready made. The type we've chosen is the kind often used for radio control, and it's surprisingly inexpensive.

The resistance of each pot changes as you move the stick around, and the Atari's internal analogue-to-digital converter turns the two outputs into numbers which reflect the stick's vertical and horizontal position.

As the resistance increases, so the numbers generated by the joystick also increase, starting at 1 – for resistances less than about 1000 ohms (1K) – and rising to 228 when the resistance is around 500K.

Now the joystick we've chosen can vary from a few hundred ohms to

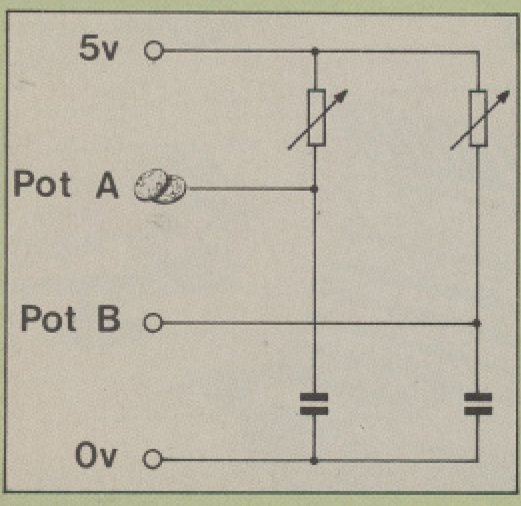


Figure I

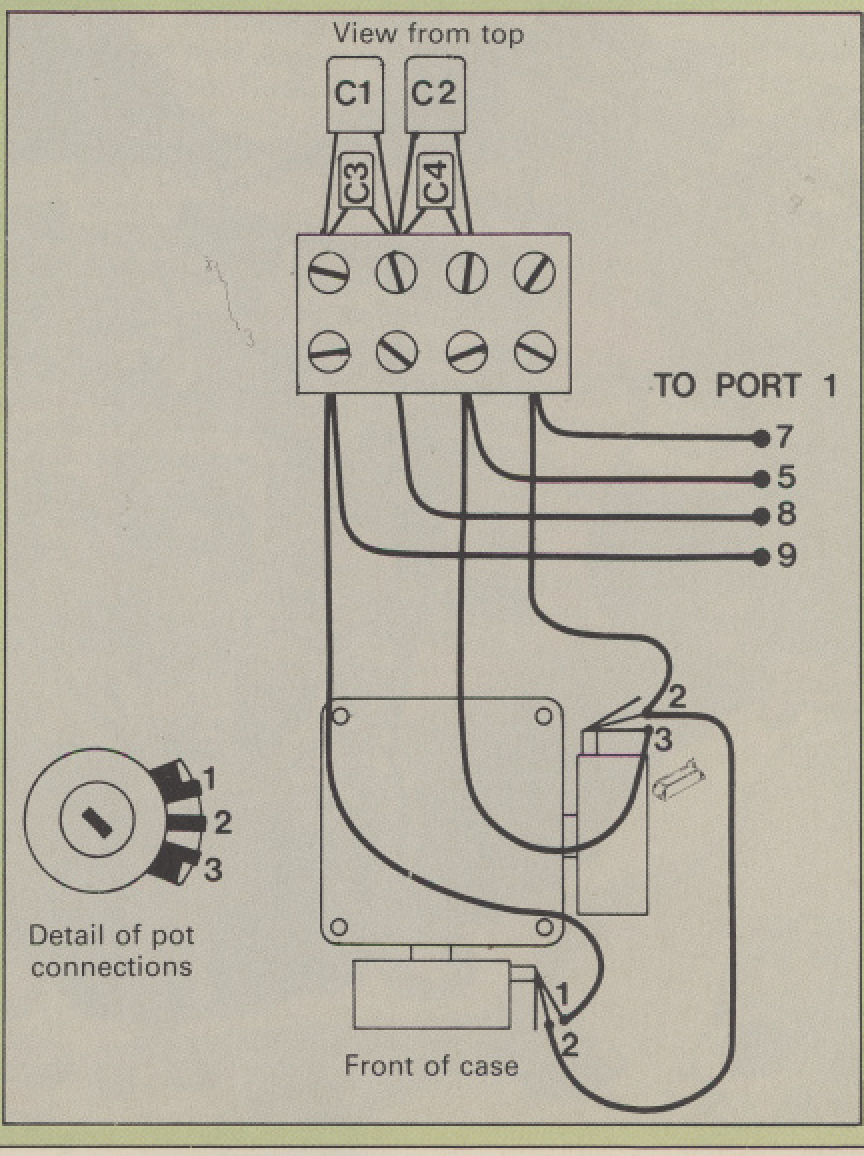
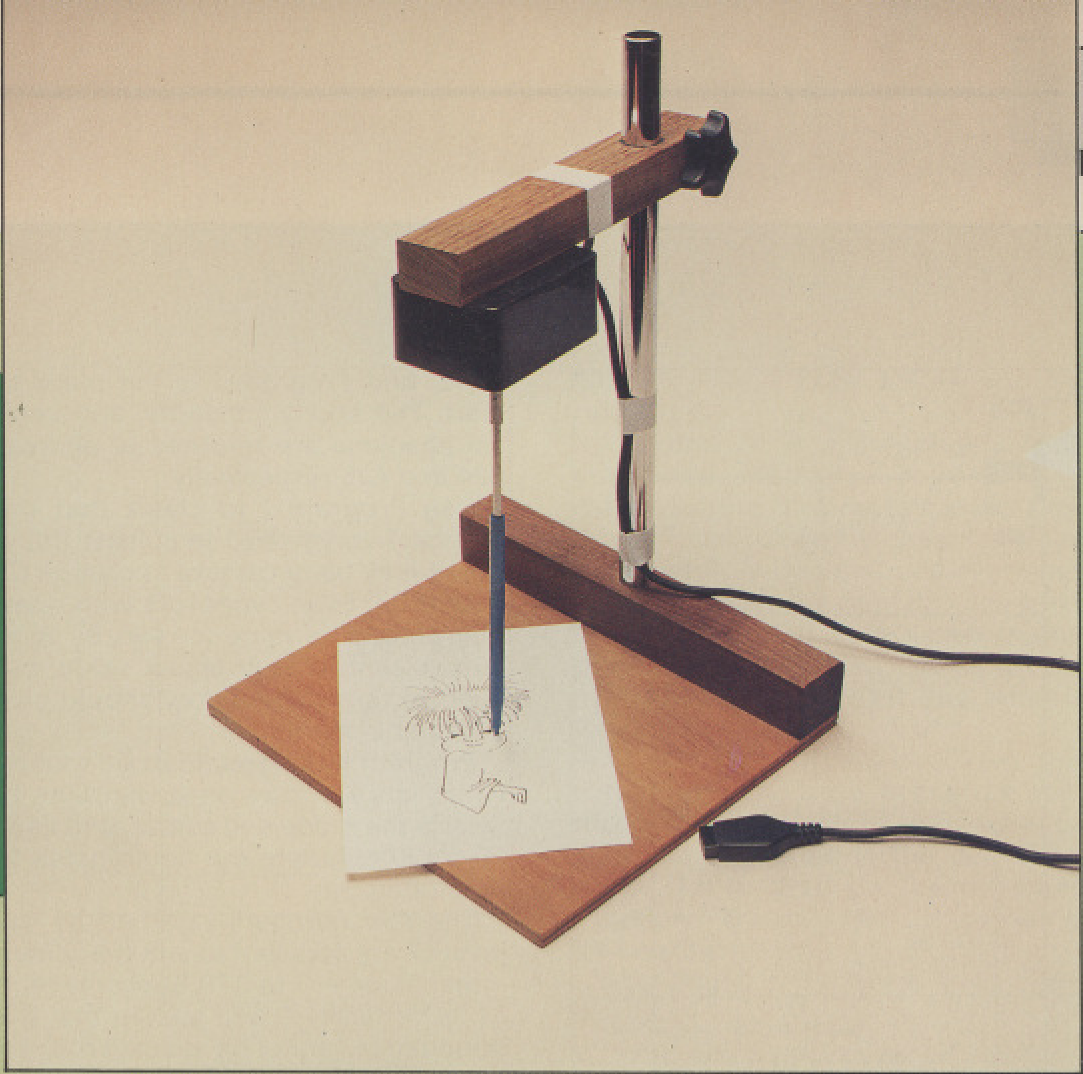


Figure II



The graphics stylus

about 200K, and left to its own devices it will generate numbers from 1 to about 84, which means that you could map the results straight on to a Graphics 5 screen (80 x 40 pixels).

However, most of the time you will want better resolution than this. So how can we make the gadget return coordinates suitable for plotting directly to Graphics 7?

The answer is simple – just wire a capacitor between each pot output and the 0v line, as shown in Fig 1. Here's the theory: The analogue-to-digital converter works by measuring the time taken to charge an internal capacitor through the pot's resistance. If you increase the resistance, the capacitor will take longer to charge, so a higher number will be returned.

Similarly, if the capacitor is made larger, it will take longer to charge through any given resistance. The joystick assembly fixes the resistance range for us, so to generate a different set of numbers we must somehow alter the capacitance value.

You can't get at the Atari's internal capacitor to change it, but wiring an extra capacitance between each pot and the 0v line has the same effect. By choosing the value with care, it is possible to make our joystick generate numbers from 1 to anywhere between 80 and 228.

This range still isn't adequate for direct mapping to a Graphics 8 screen (320 pixels wide), so very high resolution graphics are out – you can't use it for engineering drawing, for example. However it will work very well with any of the "colour" modes, and we've tuned ours to Graphics 7.

The capacitance needed is around .07 microfarads, and you can't buy this exact value in the shops. You could try .068 mfd, if you can find one with nice long leads, or a .047 mfd in parallel with a .022 mfd will give approximately the same result.

The gadget's output should now vary from 1 to about 190, and our software can easily trim this to suit a 160 x 80 or 160 x 96 screen.

Construction of the electronics is very straightforward. There's no printed circuit board, and everything is wired through a small terminal block as shown in Figure II.

Twist the leads of the capacitors together tightly before fitting them to the block, so there's no risk that they will separate during use. Leads to the pots must be soldered, and it's best to use stranded wire rather than the solid-core type, even though this is a little trickier to handle.

Although you could mount the joystick in a simple hand-held box, the "overhead arm" system is much easier to control. Figures IIIa and IIIb show how to make it, using odds and ends you may be able to find around the house.

The dimensions are not critical, and may be varied to suit your materials. The pillar can be a short piece of wardrobe rail, an offcut of 15mm or 22mm copper plumbing pipe or even a section of wooden broom handle or 3/4in dowel.

The handwheel bolt isn't strictly

→

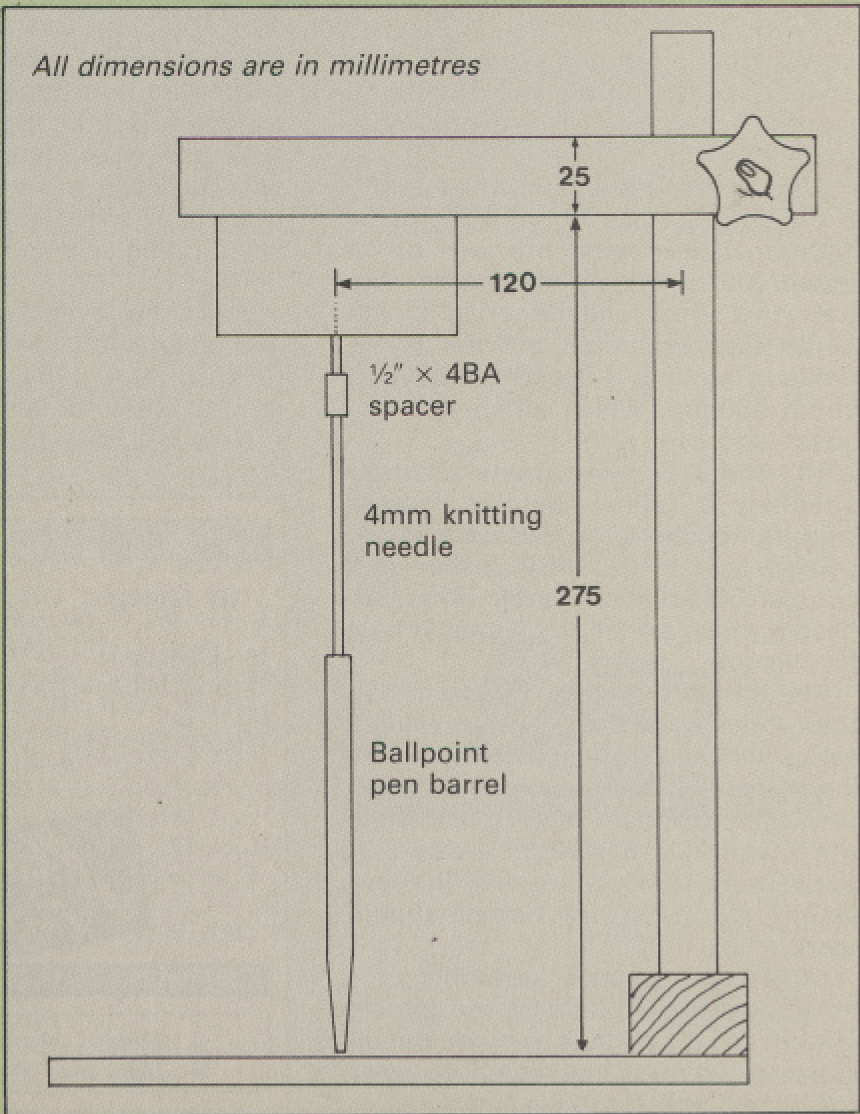


Figure IIIa

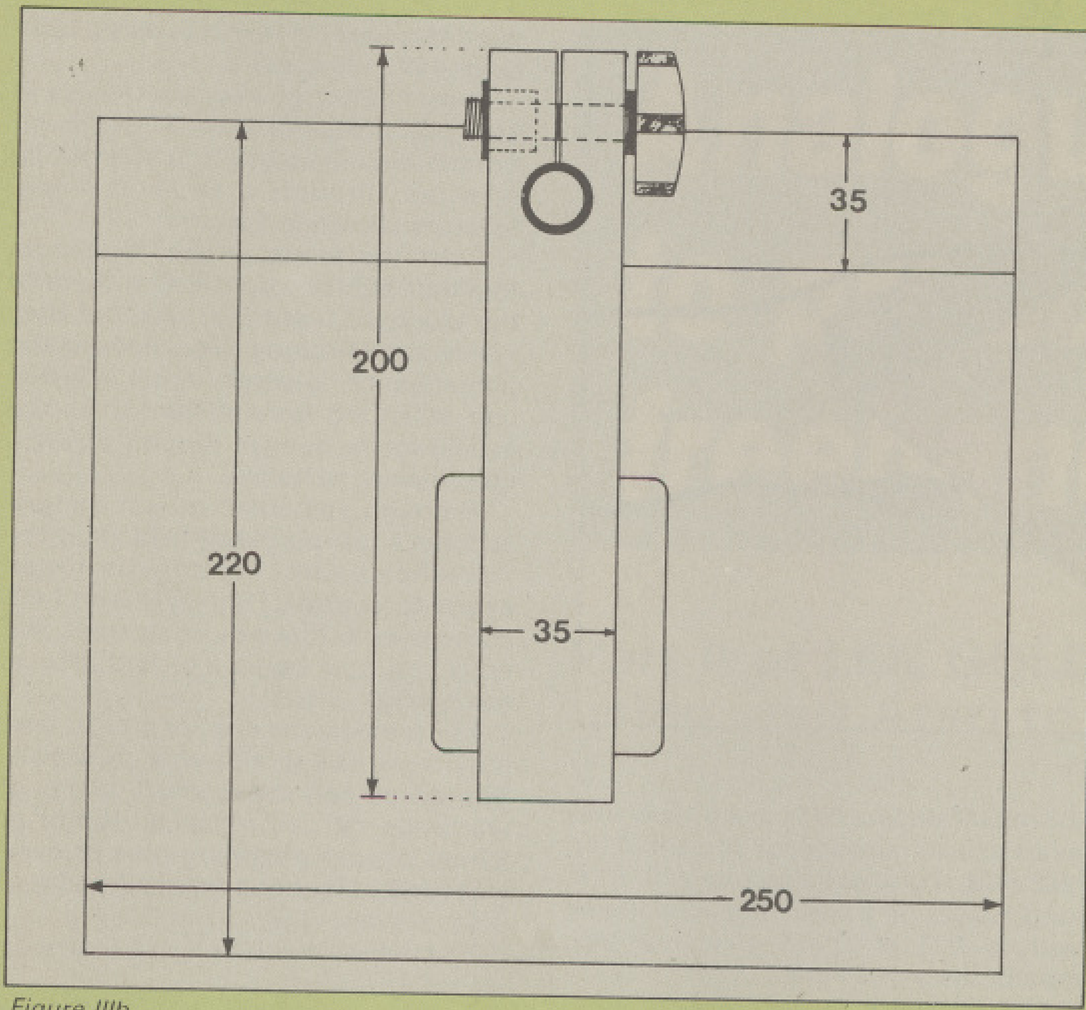


Figure IIIb

necessary – an ordinary nut and bolt, or even a wood screw will do – but it lets you adjust the overhead arm more easily.

The dimensions shown will give you a drawing surface about 170mm by 110mm, but moving the arm up or down will obviously expand or contract this area. The larger it is, the better the resolution, but the stylus tends to wobble if it extends beyond about 250mm, which eliminates any advantage.

The stylus is in two parts. Start by attaching a 160mm length of 4mm knitting needle to the joystick spindle, using a plain ½in x 4BA spacer as a coupler. Araldite or some other adhesive which can fill small gaps is best for this job.

The barrel of a cheap ballpoint pen then slides on to the needle, making a stylus which will telescope along its length, so that it can remain in contact with the baseboard at all times while the joystick arm swings around. A Papermate 2000 Stick will fit very snugly, but most pen barrels should work.

Mount the joystick assembly in a small box with a cutout for the spindle (Figure IV). It's difficult to mark dimensions on the plastic box itself, so make a full-size paper template and glue it to the box surface with Copydex.

Drill the four 3mm holes and use a fretsaw to cut out the square aperture, then the paper can be peeled off without leaving a trace. The joystick body is attached with four number 4 self-tapping screws through the 3mm holes.

Strap the joystick cable to the arm and pillar with large cable ties or plastic insulating tape, leaving a small loop to allow for vertical adjustment.

Now it's time to think about software, and Program I is the place to start. The stick's horizontal and vertical positions are returned at address 624 and 625 respectively.

Use Program I to check that the numbers vary from 1 to at least 180. If not, it may be necessary to change C3 and/or C4. Even capacitors with nominally the same value can vary by up to 10 per cent in their actual value, but even so the vast majority should give acceptable results.

Program II is a simple Basic routine which lets you draw on screen. Line 10 selects the mode and colour, and lines 20 to 30 calculate the coordinates to be plotted.

The raw numbers returned by the joystick are adjusted to suit the screen dimensions – 0 to 179 horizontally, 0 to 79 vertically – and ensure that the boundaries cannot be exceeded. Then it's simply a matter of plotting a pixel of your chosen colour at these coordinates.

Actually it's not quite that easy, because the analogue joystick works so fast that it will beat the computer's operating system, and you'll get a series of dots rather than a continuous line if you move the stylus at any reasonable speed.

The easy way round this is to use the DRAWTO command (line 70) to fill in the gaps. This tends to flatten out curves if they are drawn at high speed, but is perfectly adequate for a simple sketch pad.

Program III adds a touch of elegance, by using a vertical blank routine to do the job of checking and converting the stick's outputs. It returns the horizontal position at

Program I

```
5 REM PROGRAM 1 - TEST JOYSTICK OUTPUT
S
10 GRAPHICS 2
20 POSITION 2,4:? #6;PEEK(624);"  ",PE
EK(625);"  "
30 GOTO 20
```

Get it right!

LINE	CHSUM	LINE	CHSUM	LINE	CHSUM
5	76961	10	2041	20	7870
30	14181				

Program II

```
5 REM PROGRAM 2 - SIMPLE ANALOGUE JOYS
TICK ROUTINE
10 GRAPHICS 7:COLOR 1
20 X=PEEK(624):Y=PEEK(625):PLOT X,Y
30 X=PEEK(624):Y=PEEK(625)
40 IF X>159 THEN X=159
50 IF Y>79 THEN Y=79
60 POKE 77,0:REM Prevent screen colour
 rotation
70 DRAWTO X,Y:GOTO 30
```

Get it right!

LINE	CHSUM	LINE	CHSUM	LINE	CHSUM
5	9765	10	3594	20	5930
30	4232	40	3424	50	3211
60	11750	70	3661		

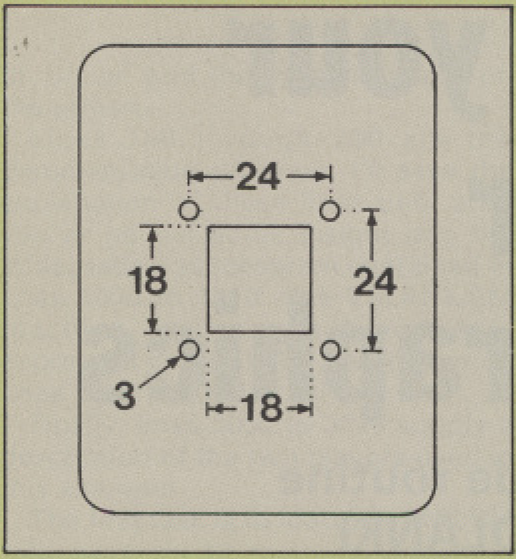


Figure IV

address 1790, and the vertical position at 1791, so all Basic has to do is PLOT or DRAWTO these coordinates.

Address 1789 contains the bottom margin value and defaults to 79, which is the top of the text window. If you would prefer a full-screen display, select Graphics 23 at line 10 and insert this extra line:

75 POKE 1789,95

Remember that, as with all machine code programs, you must get the data statements absolutely correct, and be sure to save a copy before you try running it.

Program IV is a completely self-contained sketchpad routine with extra controls. It works rather like Program III, but uses a PM graphics cross as a cursor. This can sweep over your picture without affecting it in any way, or can be made to leave a trace in one of three colours. If you've ever used a mouse, you will find the action familiar.

At the start of the program the cursor leaves no trace, but can be positioned exactly where you want to start drawing. This is the pen lifted mode. From then on the different functions are selected by pressing keyboard keys:

A	=	Blue trace
B	=	Orange trace
C	=	Green/yellow trace
O	=	Erase (plot background colour)
Space	=	Lift pen

This assumes that you are happy with the Atari's default colours, but you can easily change them using the SETCOLOR command, say between lines 130 and 140. The cursor colour (white) is held in address 704 – change it if you want to.

As with Program III the bottom margin value is 79, and is held at address 1789. For a full-screen display you should POKE it with 95, after executing the USR command.

Although this is a delighful little toy to play with, it naturally cannot compare with expensive digitisers, or high quality graph pads.

Limitations arising from the pots' internal construction and the steering geometry mean that it cannot be used as a precision instrument. You can't, for example, trace maps accurately onto the screen – though it makes a fair show of copying large line drawings or children's templates.

But as a freehand drawing aid it will give many hours of enjoyment, especially to young children, and could be a useful introduction to learning keyboard skills.

Anyone care to write a really good PAINT-type program for it?

MAIN PARTS REQUIRED FOR SKETCHPAD

		Maplin Code
1	2-axis joystick	HQ50E
2	.047 mfd capacitors	WW20W
2	.022 mfd capacitors	WW19V
1	4-way screw terminal block	FE78K
1	Plastic box	LH20W
1	½" × 4BA plain spacer	FW32K
1	Handwheel bolt and T nut	YL23A
4	½" No 4 self-tapping screws	BF66W
1	Joystick extension lead	

Program III

```
5 REM PROGRAM 3 - VB ROUTINE CONVERTS
STICK OUTPUT INTO GR.7 PLOTTING CO-ORD
INATES
10 GRAPHICS 7:COLOR 1
20 FOR X=0 TO 68:READ D:POKE 1536+X,D:
NEXT X:REM Insert VB routine
30 DATA 104,169,79,141,253,6,162,6,160
,16,169,7,32,92,228,96,173,112,2,56
40 DATA 233,20,176,7,169,0,141,254,6,2
40,9,201,160,144,2,169,159,141,254,6
50 DATA 173,113,2,56,233,40,176,7,169,
0,141,255,6,240,11,205,253,6,144,3
60 DATA 173,253,6,141,255,6,76,98,228
70 X=USR(1536):REM X and Y co-ordinate
s are now returned at 1790 and 1791 re
spectively
80 COLOR 1:PLOT PEEK(1790),PEEK(1791)
90 DRAWTO PEEK(1790),PEEK(1791):POKE 7
7,0:GOTO 90
```

Get it right!

LINE	CHSUM	LINE	CHSUM	LINE	CHSUM
5	16140	10	3594	20	13666
30	10759	40	10681	50	10603
60	5524	70	20712	80	6231
90	8169				

Program IV

```
5 REM PROGRAM 4 - SKETCH PROGRAM WITH
PM CURSOR AND EXTRA CONTROLS
10 FOR X=0 TO 174:READ D:POKE 1536+X,D
:NEXT X:REM Insert machine code routin
e
20 DATA 104,104,104,141,7,212,24,105,2
,133,204,133,206,169,0,133,203,133,205
,168
30 DATA 162,2,145,203,136,208,251,230,
204,202,208,246,169,79,141,253,6,169,1
4,141
40 DATA 192,2,169,3,141,29,208,169,46,
141,47,2,162,6,160,62,169,7,32,92
50 DATA 228,96,173,112,2,56,233,20,176
,7,169,0,141,254,6,240,9,201,160,144
60 DATA 2,169,159,141,254,6,173,113,2,
56,233,40,176,7,169,0,141,255,6,240
70 DATA 11,205,253,6,144,3,173,253,6,1
41,255,6,173,176,6,24,105,5,168,162
80 DATA 5,169,0,145,205,136,202,16,250
,173,254,6,24,105,46,141,175,6,141,0
90 DATA 208,173,255,6,24,105,14,141,17
6,6,168,162,4,189,170,6,145,205,200,20
2
100 DATA 16,247,169,0,141,252,6,76,98,
228,32,32,248,32,32
110 PMBASE=PEEK(106)-16:REM find a saf
e place for the PM data table
120 POKE 106,PMBASE:GRAPHICS 7
130 X=USR(1536,PMBASE):REM Set new VB
routine running
140 POKE 764,33:REM Select "pen up" mo
de
150 IF PEEK(764)=33 THEN 150
160 COLOR PEEK(764):PLOT PEEK(1790),PE
EK(1791):GOTO 180
170 IF PEEK(764)=33 THEN 150
180 COLOR PEEK(764):DRAWTO PEEK(1790),
PEEK(1791):POKE 77,0:GOTO 170
```

Get it right!

LINE	CHSUM	LINE	CHSUM	LINE	CHSUM
5	13381	10	16835	20	11544
30	11878	40	10412	50	10710
60	10761	70	10547	80	10736
90	11223	100	8171	110	14721
120	5210	130	11792	140	8011
150	4304	160	9428	170	4304
180	11607				

Gear up your Basic for faster graphics

A machine code routine by PARESH SOLANKI

MANY people have described the Atari's graphics as one of its best features. I won't argue, but how many of you have backed away because they looked too difficult to handle from Basic, or you simply weren't satisfied with the execution speeds you could achieve?

Well, no more excuses! Here is a machine language subroutine which you can use from Basic to achieve fast and exciting graphics without a lot of mess and fuss.

As a matter of fact, you make only one setup call to the subroutine and then forget it. Couldn't be simpler, could it? And you need to know nothing about machine language, either – just a couple of POKEs and you'll have your players dancing around the television screen.

One feature of the Atari with which you may not be familiar is its interrupt mechanism, and it is this which can be used to move your players about at machine language speed – all without the overhead of calling it each time from your Basic program.

In fact this interrupt mechanism can be made to do anything – change colour registers, update sound values and much more. But before we explore this useful feature, lets take a quick refresher course on interrupts.

As you know, the Atari keeps itself pretty busy doing its housekeeping chores even while it is running your Basic program. Among other things, it must maintain the steady delivery of information to your television screen, allowing it constantly to update the display.

Multiple, concurrent activities are performed by allowing one particular activity to periodically interrupt another.

The traditional analogy is that of a busy business executive who, while engaged in a meeting with an associate, is interrupted by a telephone call.

The ringing phone signals the interrupt and the executive pauses his meeting and answers the phone. After disposing of the call, the executive then resumes his meeting at the point he left off – hopefully.

A similar, but more controlled, sequence of operations occurs each time a complete picture is shown by your television set. The TV's electron beam paints the picture by sweeping in horizontal rows across the picture tube beginning in the upper left hand corner and ending in the lower right.

The beam is turned off when it reaches the lower right corner and is returned to its upper left starting position. This return trip is essentially a vertical positioning movement, so this period when the beam is turned off is known as the the vertical blank period.

The onset of the vertical blank cycle serves as an opportunity for the Atari's ANTIC chip to signal an interrupt – the vertical blank, or VBLANK, interrupt. The operating system uses this occasion to perform some of its internal housekeeping duties such as updating the colour registers, checking the keyboard and operating the real-time clock and timers.

Fortunately, the operating system design team allowed us to include our own machine language subroutine for execution as one of these tasks.

The machine language vertical blank interrupt player movement subroutine described here is called VBLANK/PM and it allows you to POKE the next X and Y coordinates at which your player is to be displayed.

There is no need to repeatedly call the subroutine from Basic via the USR function. The subroutine will be executed automatically during the next vertical blank period.

It is theoretically possible to move the players every time a new screen is painted on the television – and that's 50 times every second.

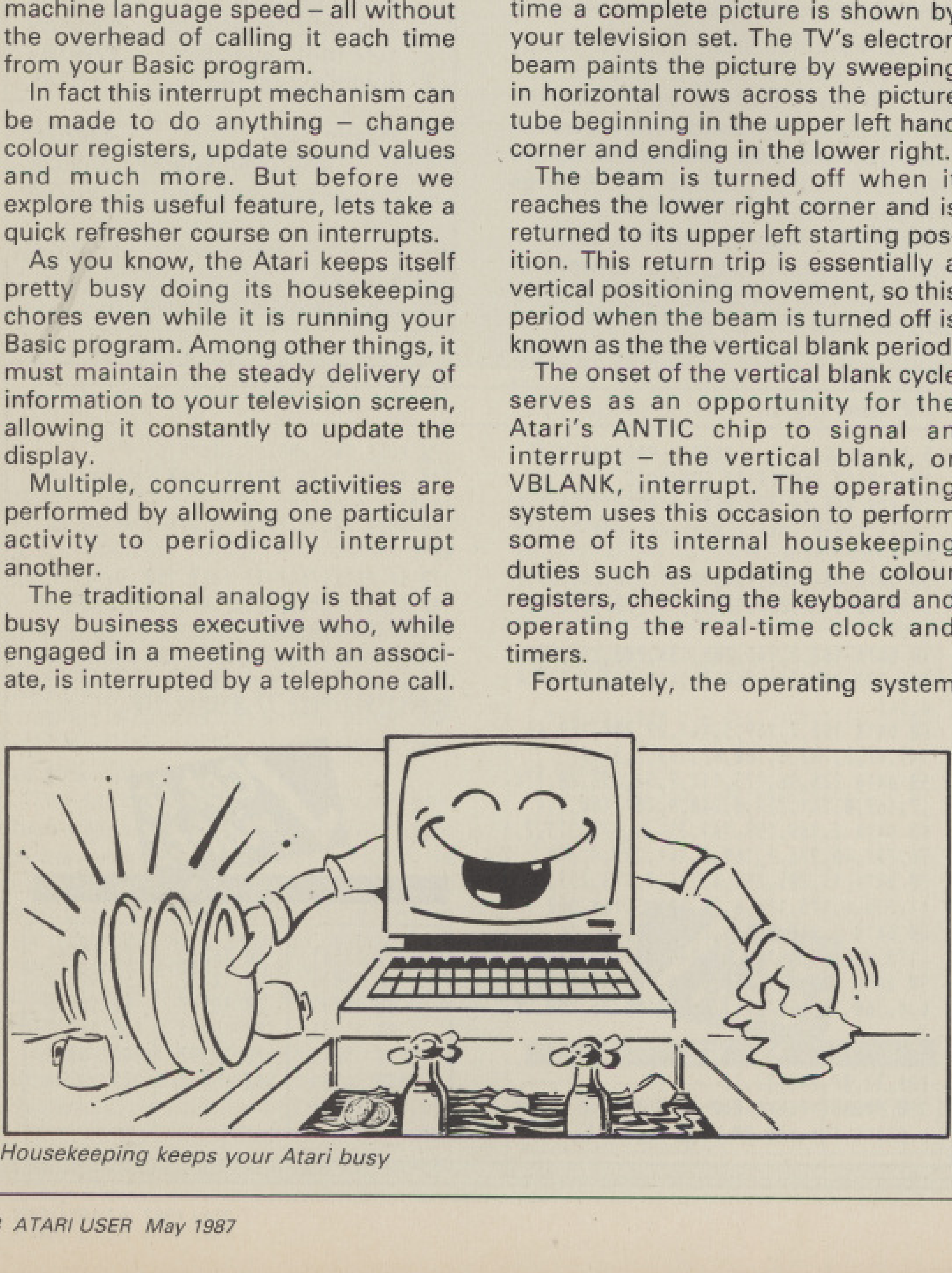
You may recall that an appropriate POKE to locations 53248 to 53251 permits you to position the four players anywhere along the X-axis. It hasn't been quite so easy to position the players vertically along the Y-axis – until now.

The VBLANK/PM subroutine moves players in both directions. Movements along the vertical axis involve erasing the data and then replotting the player in the new position. VBLANK/PM does this for you automatically. However, there are a few things that you must do first.

First you must get the VBLANK/PM machine language into memory and notify the operating system that it is to be included as one of the housekeeping tasks to be performed as a part of the vertical blank interrupt.

Next it's up to you to draw your players and tell VBLANK/PM how tall they are. After initialisation, VBLANK/PM continuously looks after the positioning of your players until you press the System Reset key.

Program I is an example of the initialisation and use of the VBLANK/PM subroutine. This program causes VBLANK/PM to be loaded and initialised and players zero and one to



Housekeeping keeps your Atari busy

be drawn and then moved about on the screen

Lines 100 through 200 are the demonstration program. I'll save the explanation of these lines until after you've gained some insight into the initialisation subprogram contained in lines 1000 to 1110. The VBLANK/PM machine language subroutine is expressed in the DATA statements on lines 2000 to 2100.

Finally, lines 3000 to 3020 supply a description of the two players used in this example.

The first task is to load VBLANK/PM into page six of memory. Page six, locations 1536 to 1791 ($600 to $6FF), has been left available by Atari's software designers for applications such as this. These 256 bytes of memory are not disturbed by Basic and the operating system, and are thus free for any use you want to put them to.

Line 1010 causes the VBLANK/PM to be read and POKEd into memory. Line 1020 clears a few locations used by the subroutine – this statement can be omitted if you are sure that page six has not been altered since you switched on the computer.

We're going to employ the Atari's ANTIC chip direct memory access (DMA) facility to transfer graphics information to the TV screen using single line resolution. This means that we must allocate 2k (2048 bytes) of memory for the storage of the player data.

In line 1030 we find the current top of available memory by reading RAMTOP. This value is measured in 256 bytes pages, so we must subtract eight pages (or 2048 bytes) to leave space for our player/missile map.

The GRAPHICS 0 is there to give the operating system a chance to take note of our revision to RAMTOP. It will place the new graphics screen below this location, and thus leave everything above RAMTOP undisturbed for our player data.

The lower 1024 bytes of this area are unused for player data in this mode, so player zero occupies PMBASE+1024 to PMBASE+1279, player one is located at PMBASE+1280 to PMBASE+1535 and so on. Figure I shows you how this looks in memory.

Line 1040 clears any residual data from the whole player area, but in most cases all except player three will be clear anyway, so if you're in a hurry you can often omit this line.

Lines 1050 and 1060 are used to draw players zero and one. VBLANK/PM expects the players to be drawn such that their top line is initially placed at the beginning of the individual player's storage area. The player can be as tall as you like up to 255 lines – of course, you will never see all of a player which is that tall on the screen at once.

Line 1070 is used to set the player colour registers at 704 to 707, and assumes that you've already set variables PCOL0 – PCOL3 to contain the values you want.

Line 1080 establishes the addresses which you will be using later to signal player movements. PLX and PLY are the locations POKEd to establish the next X and Y position of player zero.

PMBASE	Unused in this mode
PMBASE + 768	All Missiles (0-3)
PMBASE + 1024	Player Zero
PMBASE + 1280	Player One
PMBASE + 1536	Player Two
PMBASE + 1792	Player Three
PMBASE + 2048	End of PMG reserved area

Figure I: Player/Missile memory map

```
10 REM *********************
20 REM * V B L A N K / P M *
30 REM * By Paresh Solanki *
40 REM *                   *
50 REM *ATARI USER MAGAZINE*
60 REM *     May, 1987     *
70 REM *********************
80 REM
100 PRINT CHR$(125):PRINT "   Please w
ait - initializing...";
110 PCOL0=73:PCOL1=255:REM Colour of p
layers
120 GOSUB 1000:REM Initialize vertical
 blank routine
130 POKE PLL,8:POKE PLL+1,8:REM Player
s height
140 POKE PLX,108:POKE PLY,102:REM Play
er zero's initial position
150 POKE PLX+1,108:POKE PLY+1,72:REM D
itto player one
155 SETCOLOR 2,0,0:POKE 752,1:PRINT CH
R$(125):POSITION 11,11:PRINT "V B L A
N K   P M"
160 REM Move players
170 POKE PLX,RND(0)*159+48:POKE PLY,RN
D(0)*191+32
180 POKE PLX+1,RND(0)*159+48:POKE PLY+
1,RND(0)*191+32
190 FOR I=1 TO 50:NEXT I:GOTO 170
200 END
1000 REM Initialize VBLANK PM subrouti
ne
1010 FOR I=1536 TO 1706:READ A:POKE I,
A:NEXT I
1020 FOR I=1774 TO 1787:POKE I,0:NEXT
I
1030 PM=PEEK(106)-8:PMBASE=PM*256:POKE
 106,PM:GRAPHICS 0
1040 FOR I=PMBASE+1023 TO PMBASE+2047:
POKE I,0:NEXT I
1050 FOR I=PMBASE+1025 TO PMBASE+1032:
READ A:POKE I,A:NEXT I
1060 FOR I=PMBASE+1281 TO PMBASE+1288:
READ A:POKE I,A:NEXT I
1070 POKE 704,PCOL0:POKE 705,PCOL1:POK
E 706,PCOL2:POKE 707,PCOL3
1080 PLX=53248:PLY=1780:PLL=1784
1090 POKE 559,62:POKE 623,1:POKE 1788,
PM+4:POKE 53277,3:POKE 54279,PM
1100 X=USR(1696)
1110 RETURN
2000 REM Vertical blank interrupt rout
ine machine code
2010 DATA 162,3,189,244,6,240,89,56,22
1,240,6,240,83,141,254,6,106,141
2020 DATA 255,6,142,253,6,24,169,0,109
,253,6,24,109,252,6,133,204,133
2030 DATA 206,189,240,6,133,203,173,25
4,6,133,205,189,248,6,170,232,46,255
2040 DATA 6,144,16,168,177,203,145,205
,169,0,145,203,136,202,208,244,76,87
2050 DATA 6,160,0,177,203,145,205,169,
0,145,203,200,202,208,244,174,253,6
2060 DATA 173,254,6,157,240,6,189,236,
6,240,48,133,203,24,138,141,253,6
2070 DATA 109,235,6,133,204,24,173,253
,6,109,252,6,133,206,189,240,6,133
2080 DATA 205,189,248,6,170,160,0,177,
203,145,205,200,202,208,248,174,253,6
2090 DATA 169,0,157,236,6,202,48,3,76,
2,6,76,98,228,0,0,104,169
2100 DATA 7,162,6,160,0,32,92,228,96
3000 REM Players zero and one
3100 DATA 24,126,90,219,255,255,255,17
0
3110 DATA 40,146,214,254,238,254,238,1
86
```

Get it right!

LINE	CHSUM	LINE	CHSUM	LINE	CHSUM
10	3433	20	3921	30	6075
40	2843	50	5189	60	3864
70	3433	80	871	100	12821
110	9354	120	13245	130	9662
140	14669	150	10972	155	14703
160	4040	170	8145	180	9088
190	5435	200	836	1000	9488
1010	7544	1020	6231	1030	9692
1040	9048	1050	10363	1060	10395
1070	11264	1080	5058	1090	11665
1100	2092	1110	1498	2000	13940
2010	9949	2020	9846	2030	10687
2040	10644	2050	10326	2060	10077
2070	10178	2080	10602	2090	8989
2100	4843	3000	6692	3100	5475
3110	5528				

A POKE into locations PLX+1 and PLY+1 accomplishes the same thing for player one, and so forth for players two and three. PLL and the following three locations are POKEd to inform VBLANK/PM of the height of each player.

Line 1090 initialises the remaining player/missile parameters. A 62 is POKEd into location 559 to set the single line player/missile resolution graphics, and a 1 placed into location 623 establishes the player/playfield priorities – in this case giving all the players priority over the playfield.

Location 1788 inside VBLANK/PM is POKEd with the page number of PMBASE, the first page containing player/missile data. Locations 53277 and 54279 are used to switch on the DMA graphics data transfer facility and to tell the ANTIC chip where in memory to find the player graphics data.

Now you're almost ready to go. A subroutine call on line 1100 allows VBLANK/PM to notify the operating system of both its presence and its desire to be invoked automatically as part of the vertical blank interrupt process.

This is the only time in which your Basic program must explicitly call VBLANK/PM.

Finally, let's take a quick look at the controlling demonstration program – lines 100 through 200.

Line 110 sets the players' colours before the VBLANK/PM initialisation subprogram is executed. Simply multiply the colour number by 16 and add the desired intensity – the colour and intensity numbers are the same as those used in the SETCOLOR command. Line 120 sets the routine running.

Line 130 illustrates the manner in which you pass instructions to VBLANK/PM. Here we are telling it that both players are eight lines tall, though you can change this parameter at any time.

Lines 140 and 150 establish the initial television screen positions of players zero and one, respectively.

Don't forget that the extremes in both directions are not actually visible on the screen. For a player to be seen it must have an X value of between 48 and 208 and a Y value of between 32 and 228. These numbers may vary slightly depending on the adjustment of your screen. VBLANK/PM positions the top left hand corner of the graphic shape at the coordinates you supply.

Line 155 sets up a white-on-black display for the background, and lines 170 and 180 contain the routines to move the players about on the screen.

Line 190 provides a small delay between player movements. Delete the FOR and NEXT statements if you want to see how fast – and easy – it is to move players.

Well, who said player/missile graphics had to be anything but fun? Give VBLANK/PM a try in one of your current programs to add a little zip. Or just try it out in your next game or graphics project. Happy player movements!

Driving slow – American style

I WOULD be obliged if you could explain to me an abnormality I have found while using my 130XE.

I have two computers – an 800XL and a 130XE. The XL and my 1050 drive are American NTSC models which I use on a special TV via a drop down transformer without any problems. When I run my RPM test (American version) I get the figure 288 – the correct speed.

I purchased the 130XE two months ago and when I run the same test I get a figure of 348 returned – but all my programs seem to run with no problems (except for a minor colour change) as all my programs and games were purchased in the States.

What I would like to know is should I alter my drive speed to obtain 288 or just continue using it at 348 RPM? – **A.D. Hart, Hawick, Scotland.**

● There is no fault with any of your equipment, you'll be glad to know. The answer to your speed problems lies not with the drive but with the two computers.

Most disc drive timing programs work by counting the number of revolutions of the disc in a given period. The vertical blank period happens at set regular intervals, so this is often used to keep track of time.

On a UK machine this vertical blank interrupt happens 50 times a second, but on an American NTSC machine it occurs 60 times a second. This means that a clock written on an American machine will run slow on a British one.

The speed difference is 5/6, thus your value of 348 must be multiplied by 0.83333 to give an accurate reading – which works out to 290, which is quite accurate enough to run all your discs.

Pascal compiler

I HAVE owned an Atari 800 computer for five years and I have recently purchased an Atari 130XE.

For four years I have been doing a BSc in Computer Studies at the Polytechnic of Wales. During this time my primary coding language has been Pascal and consequently I have done very little Basic programming. In fact, I mostly use my Atari for word processing my assessments for college.

Imagine my surprise (and pleasure) when reading a copy of last month's Atari User *magazine (Vol 2, Issue 11 - March 1987) to discover a favourable review of a standard Pascal compiler for the Atari 8 bit micros. The review was made by John Alsbrooks about Kyan Pascal.*

However, the details about how to obtain this package were very sketchy, as only the price and an address in California were quoted. I am extremely interested in obtaining Kyan Pascal and would appreciate any further details. – **A.C. Daye, Whitchurch, Cardiff.**

● As far as we know there are no UK dealers planning to import the product, which means that you will have to order direct to America. You should order from: Kyan Software, 1850 Union Street 183, San Francisco, CA 94123, USA.

Choosing the right Dos

I HAVE not had my Atari 800XL for long and have just started buying Atari User.

In the April issue you printed the Fruits game, and I'd be grateful if you could tell me if it's alright to format my disc with Dos 3.0, and then type in the program and save it to this format. – **Elizabeth Hearty, Whitburn, Bathgate.**

● You can save the program to a disc formatted with Dos 3.0, but you are advised to use another type of Dos such as Dos 2.5. The only reason for not using Dos 3 is that it is not especially efficient or easy to use. You will find that Dos 2.5 is a more friendly system.

Comms problems

CAN you please give me some help concerning communications software?

I use a 130 XE and a WS2000 modem, with the Datatari interface. The software is the Multiviewterm package. When I logon to Prestel, I find plenty of interesting information but the buffer only allows me a very short time before I have to break away and print what I have got.

I also can't find any software available for Atari 8 bit machines to download. When I logon to Telecom Gold, I find plenty of public domain programs but I cannot find any way to download them!

Can you tell me of any program that will allow me to use the full capacity of my 130XE? I have one from the American magazine Compute! that allows me to open up the 130XE to a greater extent than the normal handbook suggests. Do you know of any program that does not have to be autoloaded, so that I can use

→

Machine code drawing

I RECENTLY brought Mapping the Atari by Compute! books. I don't think that it's as good as everyone makes out. Instead of giving examples of programs it constantly refers back to past magazines or books for example, which of course I haven't got as some are as far back as 1982. I find this very unhelpful.

For example, one of the main reasons why I bought the book was so I could find out how to DRAW a line in machine code using a routine in rom. But when I looked it up, all it gave was the start address for the DRAW routines, giving no explanation on how to use them – **Matthew Sreeves, Alcester, Warwickshire.**

● Mapping the Atari is not a tutorial book, but a memory map – as the cover indicates. It has to cover every single location within the machine, and to help you out gives references to more comprehensive reference works on that particular subject.

The machine code drawing techniques that will allow you to plot and draw are explained in greater detail within the Operating System manuals, but Mapping the Atari does cover them within its CIO description.

You could also look at our CIO tutorial series.

ATARI USER Mailbag

WE welcome letters from readers – about your experiences using the Atari micros, about tips you would like to pass on to other users . . . and about what you would like to see in future issues.

The address to write to is:

Mailbag Editor
Atari User
Europa House
68 Chester Road
Hazel Grove
Stockport SK7 5NY

the Compute! program with it before I go on-line.

I also have a comms program from Ariolasoft called Homepack. The trouble is that it gives "modem error" as soon as I try to load it. Clearly there is nothing wrong with the modem, so what am I doing wrong please?

Also, what am I doing wrong with the Telecom Gold system that stops me from downloading? The information comes up on my screen but I cannot get anything on to disc.

I rang Atari Helpline in London only to be told that there was nothing else available that uses the Datatari set-up. If there is no other program on the market, could you advise me of someone I can contact who can put me on to something larger, that better suits my needs? I find it hard to believe that the only program available for Atari 8-bit users is so limited.

Good luck to Atari ST User. Now we 8-bit users can enjoy a full magazine of our own. That brings me to another small query. What is Page 6?

I know it is a magazine, and I know that it is a Prestel page, but I think from my reading of the April issue of your mag that it is also something inside my computer. If this question sounds silly, please forgive a learner.

As a grandfather, I'm rather old to be learning anything so perhaps this is something the youngsters learn in their first lessons but I seem to have missed its significance somewhere along the way. – **Peter A.J. O'Grady, Luton, Bedfordshire.**

● Communications always seem to provide many problems for users, experienced or not. However, you do seem to have had more than your fair share of them.

All of your problems stem from the fact that the MultiViewterm software doesn't work very well, but no other software will recognise Miracle Technology's Datatari interface. Thus HomePak can't access the modem because it can't find the correct interface (the Atari 850).

However, at last help is at hand, in the form of Mini Office II. This package contains six modules, one of which is a comms package which will support the Datatari cable.

When using Mini Office II with MicroLink/Telecom Gold you will be able to spool your downloaded programs straight on to disc, or use a 10k internal buffer if you prefer. It also supports the 130XE ramdisc so you can store up to 64k of text into the ramdisc before needing to save it back on to floppy.

While this software doesn't support Prestel, you will find it very much more powerful for general comms use than MultiViewterm.

As to your final query, page 6 is an area of memory inside the Atari. One "page" of memory is 256 bytes, and so the sixth page of memory starts at address $0600 Hex (1536 Decimal). This area is special because no part of the Operating System, Basic or Dos uses it for storage.

This means that it is left free for the programmer to use, and it is often used as a safe area for machine code programs or player missile graphics data.

Proofreading problems

I OWN an Atari 800XL and I frequently use AtariWriter. When I discovered that Proofreader (a spelling corrector) existed I bought a copy from Silica Shop.

According to the package I had all the requirements, but it is only when you read the instructions (sealed inside) that it becomes clear that the Atariwriter cartridge is also necessary – thus unless you are prepared to spend £30 to downgrade from the disc version, your money is wasted.

I wrote to Silica Shop but never received a reply. Can you offer any advice as I'm sure I'm not the only person caught in this trap? – **Steven Clarkson, Leamington Spa, Warwickshire.**

● We contacted Atari and mentioned this problem. The reason Atari Proofreader does not work on disc is because the Proofreader itself requires to be online in drive 1. This conflicts with AtariWriter, which should also be booted from drive 1, so there is no way to run both modules.

I suggest that you try and get a refund or trade-in from Silica Shop.

Monthly discs

I READ with interest two letters in your April issue which referred to Atari User monthly tapes and discs. As I have recently acquired a disc drive I would be very interested in obtaining your monthly disc if this facility were reintroduced.

In fact I would also like all of the earlier copies, a couple at a time, until I catch up. If not I would indeed like to see compilation tapes/discs. Perhaps these could be split into two types: Games and Utilities. I sincerely hope that enough readers respond to make this worthwhile. – **D.McMenemy, Loauady, N.Ireland.**

Vital statistics

I OWN an Atari 800XL and being a student studying for a psychology degree, I would like to know if there are any programs available dealing with statistics, preferably on disc as I have a 1050 disc drive. – **Robert Kelvinson, Southampton, Hants.**

● Synapse Software has released a product called Syn-Trend which may be of some use to you. It is more applicable to business trend analysis, but you will almost certainly be able to adapt it.

Printing graphics

Could you you tell me how to make graphics work on the 1029 printer? I typed both listings from your September 1985 issue and it only printed to screen, not to the printer. I fiddled around with it and it still

would not work. – **Michael Simons, Crowborough, East Sussex.**

● The programs we printed worked fine to the best of our knowledge, so perhaps you are not using them correctly. Program 1 was the subroutine for the actual screen dump. The second program was simply a program that set up the screen with something to be printed out. Linking the two should produce the required output.

If this still does not help you make sure that the programs are typed in correctly.

The bit-image graphics on your 1029 are described in detail within the 1029 manual, but to help you out here is a brief outline. When the 1029 is in bit image mode (graphics) any bytes sent are not converted to an Ascii character but are printed as a 7 bit vertical bar.

Each bit can be 0 (no dot) or 1 (dot). By sending combinations of bytes you can make up a matrix of dots. Printing more lines extends this matrix down the page, thereby building up a large picture.

The problem is in working out the correct bytes to send to the printer. This is what the screen dump in the magazine has to do.

Computing by post

I WAS interested to read in the March edition of Atari User about Roy Goring and the computer correspondence course he is offering. However, you forgot to publish any details of how to contact Mr Goring, so could you please tell me his address? – **D. Stokes, Coventry.**

● Roy Goring can be contacted by writing to him at RJG Programming, Brockhampton Road, Havant PO9 1NT. Tel 0705 451214

Games shortage

PLEASE could you tell me why many good games are not being brought out for the Atari? Games like PSI5 Trading Company, Space Harrier, The Last Ninja, Hyper Sports and the long awaited Elite.

Also, could you tell me why we faithful Atari users are getting brushed aside? Atari keeps bringing out excellent games – like Paperboy and so on – for machines such as the Spectrum, Amstrad and Commodore. Why do we lose out on all those Atari arcade games that every other home computer owner can play – except us Atari fans? – **Paul Swinburn, Sheffield.**

● If you take a good look at the market, there are lots of new companies releasing games for the Atari. They obviously want to test the water first, so when a company does make Atari software available, write and say what a wise move it was. That way it will be interested in producing more.

As for the "Atari" arcade titles you mention, these are actually developed and owned by Atari Coin-Op, not by Jack Tramiel's Atari Corp. These are now two completely separate companies, and Atari Coin-Op will sell the rights to its games to whoever pays the most for them.

It then becomes a decision for the software house that buys the rights as to which formats it wants to convert the game to.

Thus, as we said before, the more you let them know that there is a demand for Atari products, the more likely it is that such classics will soon become available.

PEN PALS

Mr George Jackson, 82 Horsley Road, Barmston, Washington, Tyne and Wear NE38 8HQ.

Ludovic Houchart, Val De L'Olivet, Pont D'Ucel, 07200 Aubenas, France.

Cyril Moerkoert, Schipbeek 13, 0223-DS Lelystad, Holland.

Disc formatting options

I RECENTLY purchased an Atari 800XL computer with 1050 disc drive as a pack from Currys. This also contained some software which I was very pleased with.

However, after buying a pack of 10 double sided/double density discs from a mail order company advertising in your magazine, I became rather worried as I could not format any of them.

I first thought that the discs were at fault, and so sent them back to the company which had supplied them, asking for an exchange. The same discs were later returned with a letter assuring me that they were error free.

They had been rechecked, and one had even been left formatted with Dos 2. When I tried to format the remaining discs with Dos 2, Dos 3, Home Filing Manager or AtariWriter, error messages seemed to indicate that there was something wrong with the discs. Could you please tell me if there is a fault in my drive or computer.

I think your magazine is excellent. It is my main source of information about the Atari range.

I'm especially interested in the gadgets series by Len Golding, and would like to know if he will be including an article on speech synthesis. – **D. Butterfield, Didcot, Oxon.**

● It is possible that your disc drive is at fault. The 1050 should be able to format any normal 5.25in disc you give it, especially in single density mode.

Try using the P option on Dos 2.5 to do a single density format. If this still doesn't work, take it back to your dealer for service.

Thanks for your comments about the Gadgets series. You may be interested to note that RH Design, the company which handles the PCB manufacture for us, has had such a good response that it is now able to supply the completed gadgets. For a price list, write to R.H. Design, 137 Stonefall Avenue, Harrogate, North Yorkshire HG2 7NS.

Tape mangler

WHEN I load games into my computer I get a strange noise – and it often chews up my tapes. Can anyone tell me what is wrong with my 800XL? – **Dennis Sigsworth, Liss, Hants.**

● It sounds as if your tape recorder's motor or tape-guide and capstan are at fault – certainly chewing up tapes is not a feature that most recorders boast about. I suggest that you return your recorder to your dealer for fixing.

Cassette or disc?

I RECENTLY read your review of Action! and was wondering whether it is possible to use it with a cassette rather than a disc drive. I was impressed by your review and I'm very interested in buying it. If it

→

won't work, could you please tell me the name of another compiler and where I could get it from? – **Matthew Croft, Derby.**

● You'll be glad to know that Action! can be used with a cassette recorder as it is cartridge based and all I/O operations may be transferred via tape rather than disc. You will obviously find that loading and saving take a lot longer, and making up a library of INCLUDE subroutines might be a little harder due to the nature of tape.

The only major problem you will find is if you want to use the Run-Time package or Programmers Aid Toolkit because they both come on disc and would need to be transferred before you can use them.

Also, if you want to make run-time machine code files, Action! isn't designed to generate cassette autoboot files. You could convert the binary load format into an autoboot form, or use a little Basic loader routine. This only applies if you want to save a free-standing machine code program, as Action! source code can be loaded from cassette, compiled and then run with no problems.

Manual labour

I HAVE recently bought an Atari 800XL plus 1050 disc drive, and also a copy of your helpful magazine. I am sure that I'm suffering like all new owners due to lack of information. The manuals I received with my computer were not terribly good and don't explain the Basic commands or give any technical information whatsoever.

I am therefore led to believe that there must be a much better text available, and I hope you can give me its title. Also are there any other versions of Dos and Basic available, and which are the best?

I have so far bought only one copy of your mag but have already found it very helpful and have used some of the excellent five liners. Keep up the good work – **C. Skipsey, Birtley, Co. Durham.**

● There are many books that uncover the hidden qualities of your Atari, but they can be very technical and hard to understand at first – we normally recommend a combination of the best books available.

Be patient when learning – it can be a long and confusing task. With that in mind, start off by getting a copy of the 130XE Handbook or Your Atari Computer (Revised Edition) from your dealer.

When you want to dig a little deeper, Mapping the Atari tells you what all the locations in memory do, and is an indispensible reference guide. De-Re-Atari is another great source of information on applying the power of the Atari to its fullest.

These two books cover all the ground rules needed, but they are heavy going. You can also buy various other books which skip lightly over complex matters and these would be fine for a beginner.

There are many alternatives to Atari's Dos and Basic, including: Dos 1.0, Dos 2.0, Dos 2.5, Dos 3.0, SpartaDos, Dos-XL, My-Dos, K-Dos, Microsoft Basic, Basic/XL, Basic/XE, and various compiled versions of Basic.

Ask your dealer for his recommendations, but the combination of Basic/XE with either Dos-XL or SpartaDos would be very powerful indeed.

And keep looking at *Atari User*. Helping users get the best out of their computer is what we're here for!

Spellbound help

I HAVE a few tips for Spellbound. To get the lift working take the Midlinir from Elrand the Halfelven. Summon Thor to the lift using the Elf horn.

Give the Midlinir to him and then command him to help with the Wand of Command from the roof. Thor will now hit the control box with the Midlinir enabling you to go to the basement.

The Elf horn can be obtained from Samson The Strong on the 2nd level.

To get past the gas room on the first floor collect the Red Herring from the 3rd floor and Power Pong Plant from the basement. This will enable you to cast a Fumecus Protecticus spell.

To get past the dark room on the 3rd floor you must collect the glowing bottle from the L shaped room on that floor.

To get extra energy collect the Bottle of Liquid from the roof and give it to Florin, then take it back again and you will now have full energy.

To blow up the wall on the 4th floor collect the pocket laser from the ground floor. Summon Lady Rosemar to the 4th floor and give her the laser.

Now command her to help and she will blow up the wall using her quick blow fuse to fix the laser. – **Neil Richardson, Camberley, Surrey.**

User friendly

I WANT to tell fellow Atari users of the good, friendly and fast service that Compumart UK has provided me.

Four months ago I bought a 1050 disc drive with the free games, but on January 16 it would not boot properly so I rang them up and they gave me a freepost address to send the drive to.

I sent it off and four days later I got the disc drive back. Well done Compumart for the fast service.

Dutch dilemma

I RECENTLY bought an Atari 130XE. I live in Holland and I was therefore supplied with a manual in Dutch. It is impossible to obtain a manual in English, so until I do, I can't use my computer fully.

I would therefore be grateful if anyone can help me. – **A. De Borbon, The Hague, The Netherlands.**

● Why not write to Atari UK, as we're sure that they'd be able to help you with an English version of the manual.

Failing that, try to get hold of a copy of a book called The Atari 130XE Handbook, or another entitled Your Atari Computer. Either will give you lots more information than the manual does.

Computer support

Following advertisements in your magazine by Computer Support (UK) Ltd, on the 17/11/86 I asked them to supply a 64k upgrade for a

MicroLink

ALL program listings in *Atari User* are now available for free downloading on MicroLink, the UK's fastest growing electronic mail service. They join hundreds of programs already available on Britain's national on-line database.

600XL, the cheque being cashed on 27/11/86.

Several letters followed requesting the reason for delay in delivery without reply, until recently my latest letter was returned by the Post Office indicating that this letter was not delivered and that they had gone away.

In desperation I am writing to you in the hope that you know the whereabouts of this company, so that I can try and reclaim my £29.95. It is disappointing that this firm has not answered my letters especially when another firm – Homeview – was still advertising in your magazine as a dealer for Computer Support as recently as February. – **R. Preddy, Haverfordwest, Dyfed.**

● Computer Support has moved to a new address and should be able to sort out your problems at: Computer Support, 153 Parrock street, Gravesend, Kent.

Compatible modems

I am interested in knowing the difference between modems offered in the UK and modems offered in the United States. Are they compatible? And if not, could you provide some information on these differences. It would be greatly appreciated. – **William R. Thompson, Huntington, Cambridgeshire.**

● There are differences between the UK and American telephone systems so the tones which the modems use are not the same. Unless you have a modem that can produce both tones they cannot communicate with each other. The American system is called Bell and the UK standard is CCIT.

Another point to remember is that American modems are not approved by BT and thus you are unable to use them here.

YOUR HINTS AND TIPS

PROLONG YOUR ACTIVE LIFE

Bruce Lee: *On the eleventh screen you will see two orange masks. Run into these and you will be awarded an extra life. Go off the screen, then go back and collect them again! You may do this several times, but if you complete the game the masks will not be there on your second play.*

On the last screen (the one with the chained warlock spitting at you) you must run straight across without stopping.

Goonies: *On the first screen, go behind the water tank and jump at it. It will fall, opening a trap door.*

Thrust: *Here is a new screen skipping method. Simply shoot the reactor until the countdown has begun, then thrust upwards until you warp. The mission will have failed, but you skip on to the next screen without losing a life.*

This will work for the first few screens, but as the reactor gets deeper and deeper into the complex it will become harder to pull this stunt off – so just shoot the reactor and wait. This time you will lose a life but will still skip on to the next screen.

When you thrust upwards, do not shoot as the shots will fly back into you. Also, when you first warp on to a screen it is possible to shoot before your ship actually appears – this may help if you warp in somewhere inside the complex.

Montezuma's Revenge: *The following set of operations will solve all levels except two. U and D stand for Up and Down, and L and R are Left and Right. T and M refer to Top and Middle, and K and T mean collect Key or Torch.*

DM / K RT / DM / K K UM / LT / LT / DM / RT / DM / K UM / LT / K K LT / DM / LT / RT / RT / RT / K UM / LT / LT / DM / LT / K DM / RT / RT / RT / DM / LT / LT / LT / T DM / RT / RT / RT / DM / LT / DM / K LT / DM / RT / K RT / DM / Diamond Mine. – **Ben Halligan, Penny Pot Lane, Harrogate.**

FINDING THE DRAGON IN ZAXXON

I'M writing in response to the recent plea for help in getting past the third level of Super Zaxxon.

Having spent many hours myself trying to crack it, just do the following: Look at the height indicator on the left of your screen. At the first wall, it should read two-and-a-half squares, at the second three-and-a-half, at the third one-and-three-quarters and at the fourth and final wall two-and-a-half again.

All of this work is worthwhile, though – the dragon in the next stage has some excellent graphics. – **Lee Hodgin, Chippenham, Wilts.**

MEDIATOR

IN reply to the letter from C.P. Slater who needed help with Mediator: After collecting all six bones, the horse appears from the soil. You then have to guide the horse over the river by walking on the tree to the far right hand side of the screen.

The horse has to be directly behind you when walking over the tree. This is how to complete this sheet – but you've got a lot more problems ahead of you! – **Robert Taylor, Pinner, Middx.**

BOUNTY BOB EXTRAS

Bounty Bob Strikes Back: *Go to the menu screen and move the cursor to the Special Code register. Set this to 61800. Now hold down the F key and press Option. Then press Start.*

You will now be able to use the following keys:

F Bob can fly anywhere on the screen. Press F again to stop.
Q Go to next screen.
A Go back a screen.
B Bob goes back to his original position.
Z Reset Screen.

– **Michael James Clatworthy, Lichfield, Staffs.**

PASSWORDS, NETS AND DITTIES

Starquake: *Passwords are Artic, Traid, Kernx, Minim, Crash, Atari, Penta, Cosec, Delta, Salco, Quark, Argon and Zap.*

Warhawk: *On the higher levels, a glowing net appears: If you touch it you can fire twice as fast.*

AtariArtist: *On the main menu, position the cursor over the centre line of the Atari logo. Press fire and a little musical ditty is played.* – **Nicholas Linehan, Tideswell, Derbyshire.**

So you want to write for . . .

ATARI USER

WANT to see your name into print? If you would like to write for us here are a few hints and tips which will give you a better chance of being accepted:

● *Whatever you send us should be of general interest to other Atari users. You may find a program to tell you when your rabbit needs feeding of use, but it's doubtful that there will be a mass market for such a piece of software.*

● *When submitting anything always send both your article and/or program on tape or disc, rather than just on paper. If you have a printer a listed output would be preferable to a typed one. We can't accept handwritten programs, no matter how good they might be.*

● *Don't forget that the same applies to articles. Please send a copy of the text on tape or disc, as we use a method of typesetting directly from Atari micros.*

● *Avoid using non-standard tape or disc formats such as Dos 3, Spartados or increased baud rate tapes. If there is absolutely no way you can send a disc or tape of your text, you should type it clearly, double spaced on white paper. If your work stands out as being good enough we could then get it transcribed on to computer.*

● *While we can't guarantee the return of material sent in to us, if you enclose a stamped self-addressed envelope we will endeavour to see that your work is returned.*

● *Make sure that your name and address and the title of the article or program is on everything you send, including the tape or disc and each sheet of text. A phone number – preferably daytime as well as evening – would also be useful.*

● *Please state clearly that the submission is your own work, and that it is being offered for publication in Atari User and has not been previously submitted elsewhere.*

● *We prefer articles to run to between two and four pages (at about 1,000 words a page, less with diagrams and listings), or to be broken down into separate parts if they are much longer. Rates are paid per final printed word, not by how much material you actually send, so make your article clear and concise.*

● *If you are submitting a program you should explain fully how it works, preferably with a rough line/variable breakdown. Point out any problems which may occur during typing, and how they can be overcome.*

● *Aim to make your programs readable, with plently of REMs to indicate what is going on. However, never jump to a REM statement, as many people like to leave them out when typing in a listing.*

● *Try your program out on an unsuspecting friend. This will often throw up a problem you hadn't even considered.*

● *Try to avoid graphics and machine code placed in strings. Unless there is no alternative, put your machine code into data statements since Control-key graphics are very hard to enter correctly.*

● *Above all, remember that your submission should be interesting, informative, useful or fun, and clearly laid out.*

The address to write to is: Features Editor, Atari User, Europa House, 68 Chester Road, Hazel Grove, Stockport SK7 5NY.

Your two-year index

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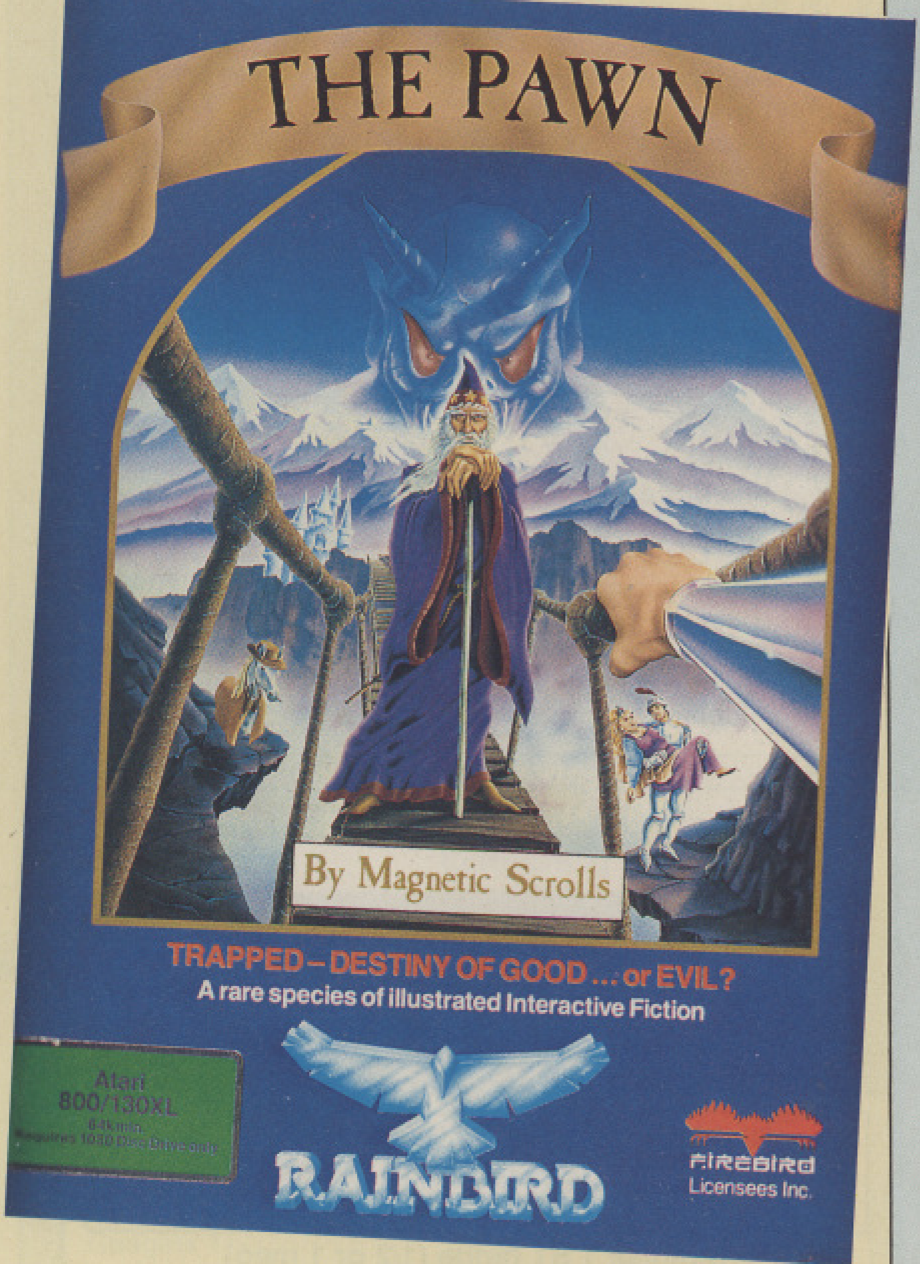
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ATARI USER MAIL ORDER OFFERS

SAVE UP TO £10

Lose yourself in the magical world of Kerovnia!



This fascinating adventure features the most sophisticated parser around: You can type complex sentences and interact with the many characters, including some very intelligent animals.

This superb package includes a 44-page novel and a cryptic help section.



"The program took three man years of programming time to produce – and it shows. The Pawn is the stuff from which cults are made."

– Anthony Ginn, writing about the Atari ST version in the May 1986 issue of the Atari User

Suitable for	RRP	Special reader offer	YOU SAVE	Offer including subscription	YOU SAVE
Atari 800/130 with minimum 64K plus 1050 double density disc drive	£19.95	£14.95	£5	£21.95	£10

TO ORDER TURN TO THE FORM ON PAGE 59

Exit maps, courtesy of Night Orc

By Brillig

HELLO, it's your old pal Brillig here again, but this time I feel a bit old. My adventuring mind is still as sharp as ever – no . . . sharper in fact. Looking in the mirror I can see no changes; looking outside tells me everything is the same – but I am somehow different, somehow rejuvenated in both mind and spirit.

A truly amazing thing has happened my friends, and Brillig is now consumed with solving every adventure known to man and beast. My three hearts pound in unison as frantically I rush to my computer console and without a moment's hesitation load up the software, reach into the mailbag and embark upon my own special quest – to help adventurers one and all overcome the fiendish tricks and traps that have befallen so many others in the past.

Some news comes to the cave this very morn of a bunch of role playing games soon to be available from SSI, called The Wizards Crown, The Rings of Zilfin and the Shards of Spring. Also coming out soon are Phantasie II and III.

Level Nine is about to release its first totally new adventure for many moons. Entitled Night Orc, it puts you, the adventurer, into the guise of an actual orc who has been wronged by humans. The game contains some startling new ideas from the Austin brothers whose text compression techniques are famed throughout the known universe.

Not content to stand still, they have developed a new coding system – a way to dispense with map-making; type in the name of the location you want to go to and the character will head off in that direction. You can also tell other characters to run other errands at your behest. They have at last done away with those awful graphics that used to dominate their stories and instead are using digitised pictures. It all sounds bliss to me, and rest assured as soon as Night Orc is in my hands I will give you the full run down.

A trip to the offices of Magnetic Scrolls is something of an adventure in itself since it is tucked away in a tiny corner of early South London, not a stone's throw from London Bridge. I received a warm greeting from the programming team and was quickly provided with a cup of coffee (which, I am reliably informed, is a ritual – you will never see them without one).

"So you've come to play Guild of Thieves, have you?", they all sniggered as they gave each other those "he doesn't know what he's letting himself in for" looks. Taking no notice of this idle banter, your fearless hero sat down at the keyboard and began to type.

The adventure is set once again in Kerovnia and revolves around your attempts to become a better thief and to join the infamous Guild of Thieves of the title. The game opens with you and the Master Thief in a small boat adjacent to an old jetty. He gives you your instructions, which are to relieve a nearby castle of its treasures and return them to him in his boat. You start with just a swag bag to your name, and a great deal of hope.

The pictures in Thieves – and there are around 30 of them – are possibly even better than those in The Pawn. After some wandering around the scrublands you will come across the castle, complete with its splendid moat, and it's here that most of the action takes place.

There was some talk of Thieves being easier than The Pawn, but you can put all notions of that out of your mind. Some of the puzzles are pretty tricky to say the least. Thieves also has the same ability as the new Level 9 offering in that it too has the excellent new GO TO command which will let you revisit a location automatically. You can even type GO TO SWORD if you can't quite remember where you left it!

The room descriptions are good and meaty, and there are lots of little clues hidden in the text that could easily be overlooked. The humour that ran through The Pawn (remember the Porter in Hell?) is very apparent. I found one lovely sequence while in the library that involves over 25 differ-



HINTS 'N' TIPS

SPELLBREAKER

Can't open the vault?

LLEP SVOR ZERE HTEK AMNE HTDN AEBU CEH TTEG

Want to avoid the lava?

XOBD LOGE HTES UOTW OHTU OERU GIF

THE PAWN:

Can't get into Hell?

1. HTEB CAMF OKN IHT
2. ROOD TNOR FASTI ETIL OPYR EVEB
3. SIWE LSIOS YTSR IHTS IRET ROP EHT



ent book titles and their contents.

Anyway, after about four hours and uncountable cups of coffee I called it a day. Guild of Thieves is certainly going to be another classic, make no mistake, and I for one cannot wait to play the whole thing.

Those boys at Infocom have also been pretty busy lately, and they've just released a challenging yet very witty adventure – Hollywood Hijinx – based on those terrible B movies of the 50s. You play the part of nephew to Buddy Burbank, famed producer of a whole series of budget movies like A Corpse Line and Melt Down On Elm Street.

He resided with his wife in a typical palatial mansion on Malibu Beach, which carried with it all the trimmings of the movie business. Uncle and Aunt Burbank have now passed away, and left you their whole estate, provided that you find 10 treasures that are hidden in the house and grounds before morning.

So the adventure opens with you outside the mansion with nothing but a photo of Buddy, a torch and the will in your possession. Right away there is a puzzle: All the doors are locked and you have no keys, and checking the windows they are all secure. How do you get in? No clues for you I am afraid – but check the packaging very closely. Hollywood Hijinx is a great spoof, well worth the money and certain to become yet another Infocom classic.

While I'm talking about good adventure writing, it's time to get something off my chest. Something I really detest in an adventure is the quick kill off. You know the sort of thing – there you are happily exploring an ancient castle when all of a sudden you turn a corner and "You are suddenly engulfed in a room of ice. You are dead".

Just like that, without even a "Brr, it's cold in here" to give you a clue! So we poor adventure addicts have to indulge in constant saving just to avoid that eventuality. Ridiculous.

One other major hassle is the maze. I cannot for the six lives of me understand the mentality of a maze. It's a boring repetitive unoriginal waste of time and effort. It's put in just so the programmer can glean a little bit of self-satisfaction from a fustrated first-time mazer. If I come across just one more stupid maze I am going to publish that author's name and address to exact revenge! Programmers, you have been warned...

Now on to your questions: Craig Fippard from Grantham writes "Could you please let me know what I am supposed to do next in Ballyhoo. I can get the balloon, pass through the turnstile, crawl under the tarpaulin and enter the clown alley, as well as finding the ticket. I just don't know what puzzle to solve next..."

Well Craig, you must use the ticket to pass through the other turnstile and visit a few more locations in that area. There is a fat lady who needs help, a hypnotist who will send you into a dream, a gorilla with a musical bent and an electric pole to look out for. Keep at it and let me know how you get on.

Sean Huxley writes: "I need urgent help in Wishbringer. I am stuck in the library. Do I need the statue?" Sean, there is no library in Wishbringer – possibly you mean the museum? If so, then the statue is very important indeed – it could even be the missing cat Chaos. Try reading the violet note.

Barry Prescot is having trouble with Zork I. The thief keeps killing him and he still can't get the egg open. Listen carefully Barry: Give him some of your yolk to carry, that will sort out his egg.

And finally D. Billingham is stuck in Mordens Quest – he just can't get past the waterfall or Tarzan. Hrmph, such a trifling little ditty for a beast of my experience. Draw the outline of the jungle to get past Tarzan, and to pass the waterfall you will have to sacrifice the Frog.

Well that's about it from me for this month, but I'll leave you with a couple of questions. Firstly, what do you think of the new adventure map section? Why not put pen to paper (or fingers to the keyboard) and let me know which adventures you think deserve covering.

Finally, there has been much debate about the relative pros and cons of using graphics within adventure games. Now, you all know my opinions on this matter, but what do you think? Drop me a line and let me know who prefers text-only and who prefers graphics – I'll let you know the results in a forthcoming issue.

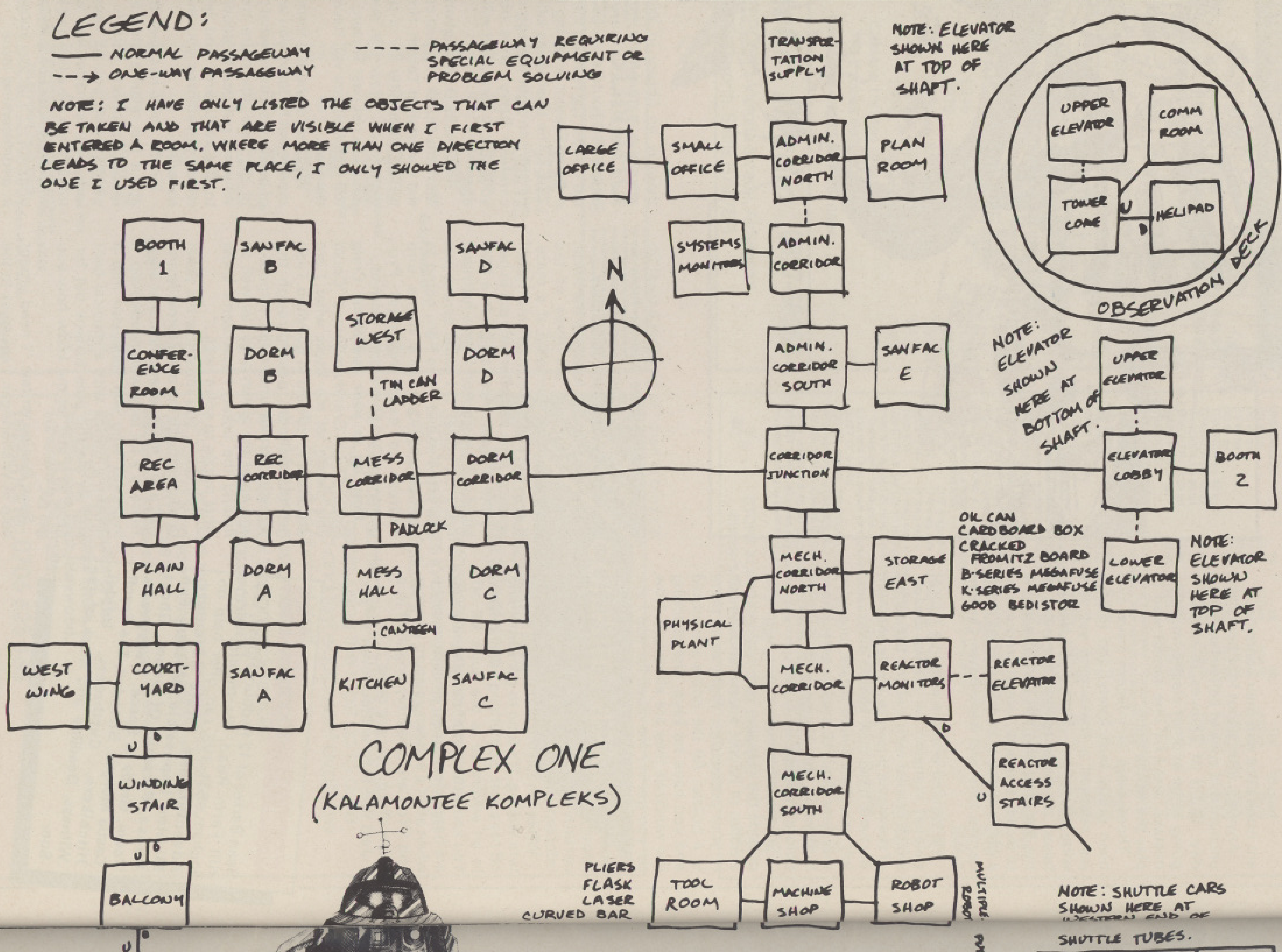
Farewell for now.

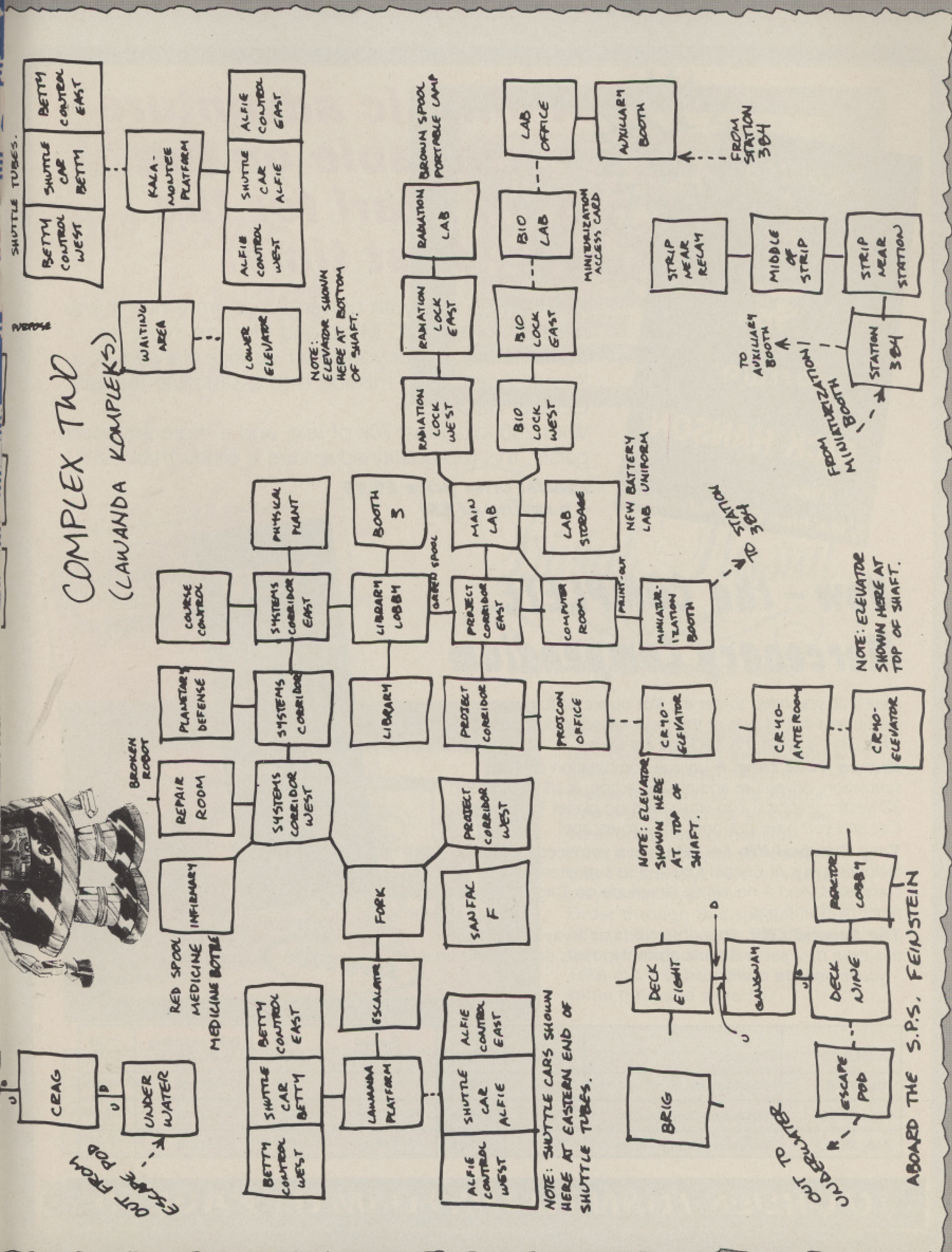
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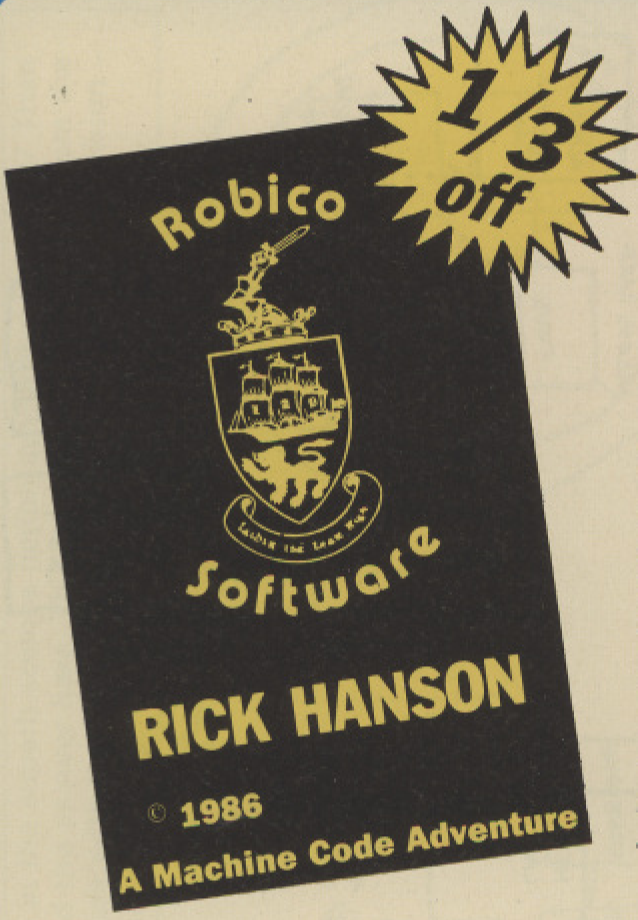
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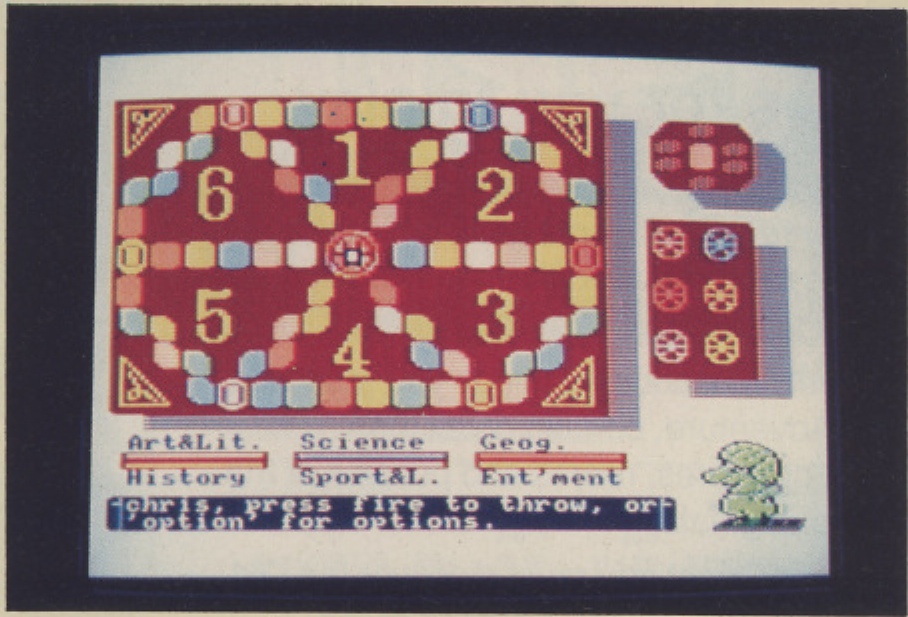
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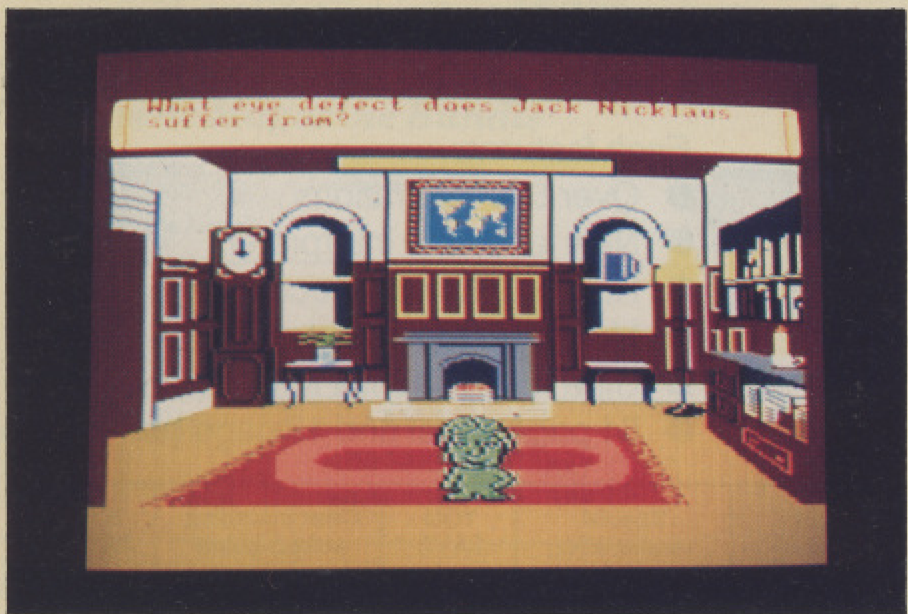
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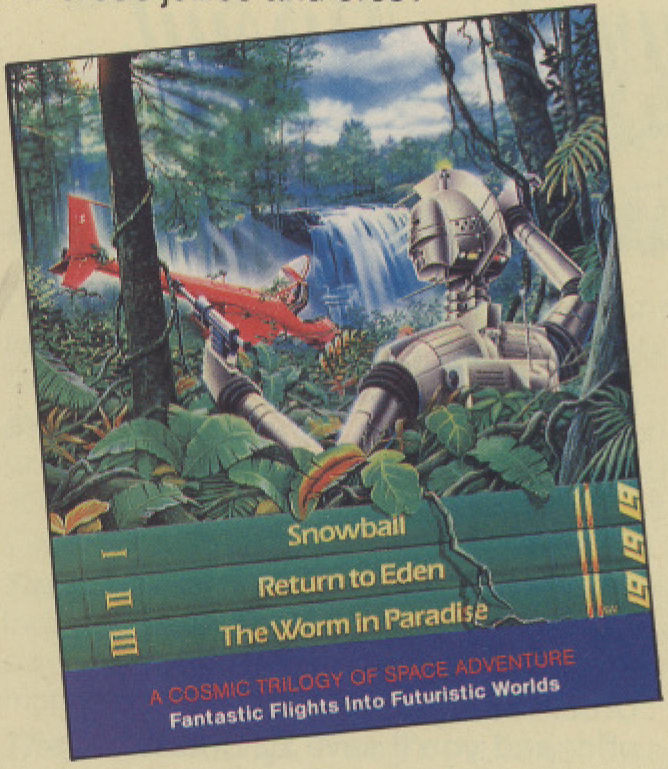
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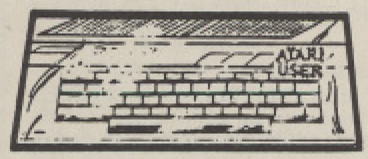
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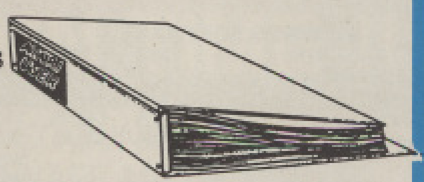
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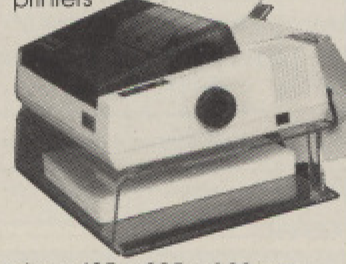
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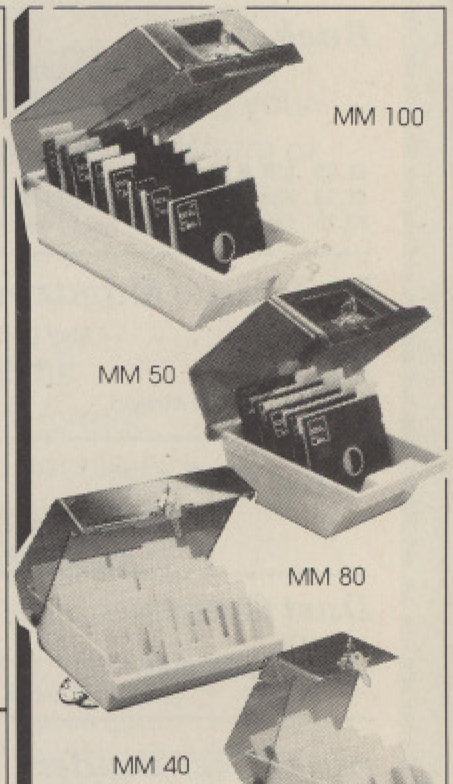
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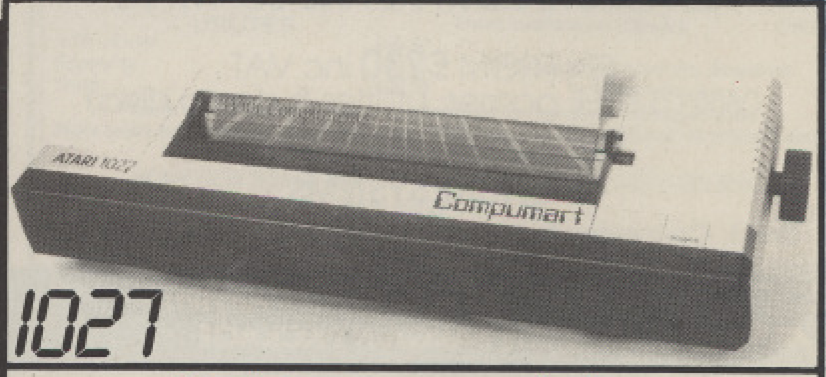


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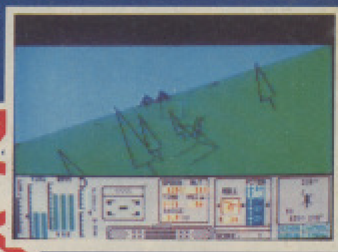
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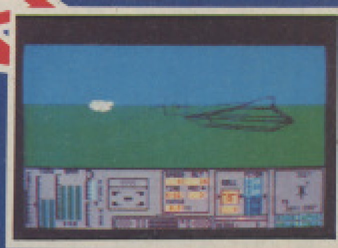
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